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ABSTRACT

This report presents the summative evaluation of four components of Boston's Title I project (1976-77). Areas in which three of the programs, the Elementary Reading and Math Program, the Middle School Reading Program, and the National Institute of Education (NIE) Demonstration Project (reading), were particularly successful were administration and supervision, early program initiation, student selection and evaluation, and the perceived value of the program among staff and parents. Common problems were communication between regular and Title I teachers, and parental communication and involvement. The Elementary program had positive outcomes both in reading and math, although results were less consistent in the former. The Middle School Program produced larger gains than projected. The NIE project also resulted in significant gains. The fourth component, the Health Education Program, charged with providing supplementary health services, faced a number of problems, including lack of response from high priority schools, lack of cooperation from some school nurses, the inability to implement a parental training program, and concern about the possibly conflicting roles of school nurse and health team. Successes included increased numbers of referrals, excellent working relationships with some nurses, a large number and variety of services provided, and increased clarity of the role of the program among school personnel. Appended to this report are data on and statistical analyses of test scores. (CMG)

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ED238951

# BOSTON PUBLIC SCHOOLS

**Boston, Massachusetts**

# EVALUATION OF THE TITLE I PROGRAM

## — ELEMENTARY READING AND MATH PROGRAM

## — MIDDLE SCHOOL READING PROGRAM

## — NIE DEMONSTRATION PROJECT

## — HEALTH EDUCATION PROGRAM

**1976 - 1977**

U.S. DEPARTMENT OF EDUCATION
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HEURISTICS INC.

# FINAL EVALUATION REPORT FOR

- THE ELEMENTARY READING AND MATH PROGRAM

- THE MIDDLE SCHOOL READING PROGRAM

- THE NIE DEMONSTRATION PROJECT

- THE HEALTH EDUCATION PROGRAM

1976 - 1977

Report prepared for the
Boston Public Schools

by

Heuristics, Inc.
Wellesley, Massachusetts

In cooperation with the Department of Title I
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Secondary Education Act

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# INTRODUCTION

The Title I Project in the Bostor Public Schools represents a substantial effort (approximately 8.5 million dollars) to serve the needs of educationally disadvantaged students from pre-school age to high school. Approximately fifteen thousand students are served in seven programs--Reading-Elementary School Level, Mathematics-Elementary School Level, Early Childhood, English as a Second Language, Reading-Middle School Level, Boston High School-Work Study. In addition, this year Boston served as one of the sites for the national demonstration project being conducted by the National Institute of Education (NIE). The NIE Demonstration Project, a reading program at the elementary level, was a new component in the Title I program this year. Related services include the Health Education Program, In-service Training, and the Library Program.

This report presents the summative evaluation of four of the instructional programs and one related service program within the total Title I project. These are: the Reading Program-Elementary School Level and Mathematics Program-Elementary School Level, which are commonly referred to as the Elementary Enrichment Program; the Reading Program-Middle School Level; the NIE Demonstration Project; and the Health Education Program. Two interim formative reports were prepared for these programs in March and April of this school year. Elements of the interim reports applicable to the summative evaluation are also included in this final report.

The program retained for 1976-1977 a structure very similar to the program for the previous year. The main components were the same, and goals, student participants, staff and administration were not appreciably different this year from what they were in last year's program. Given these similarities in structure and emphasis, then, the evaluation reports on much the same issues as raised in the last report. To maximize the usefulness of this year's findings, a number of important references to the previous report are built into the present one; and the format is in large part parallel to that used last year, to facilitate further comparison of the findings on this year's different group of student participants.

## EVALUATION DESIGN

### Elementary Enrichment Reading and Mathematics Middle School Reading Program and NIE Demonstration Project

Evaluation of the Elementary Enrichment, Middle School Reading, and NIE Demonstration programs proceeded under a single evaluation design, which included a broad range and variety of data sources and utilized several data-gathering techniques. Table 1 provides an overview of the comparatively complex evaluation process required for these components. As shown in the table, the evaluation focused on such input and process variables as: administration and supervision, instructional environment and processes, materials and supplies, morale, objectives, parent involvement, in-service, and the like. Product data were also obtained--the students' test results in reading and mathematics in the elementary and middle school grades. This report, then, will present the evaluation of inputs and processes as well as program outcomes.

The overview of the evaluation design presented in the table necessarily synopsizes much of the activity, in the interest of presenting a precise and comprehensive view. However, several of the entries in the table require some expansion and comment here.

First, a considerably large variety of instruments and procedures were employed. Further, within a single technique--the questionnaire, for example--a range of forms was employed. Where each of the listed data sources called for

Table 1

Summary of Data Sources and Data-Gathering Techniques and Purposes

| Data Source | Data-Gathering Technique | Number | Purpose for Which Data was Gathered |
|---|---|---|---|
| Program Administrators | Individual Interview | 8 | Across all data sources except students and environment, the purpose is to gather information on the matters of administration and supervision, instructional processes, materials and supplies, morale, objectives, parent involvement, and training. Additional purposes are entered for some of the data sources. |
| Supervisors/ Staff Development Personnel | Group Interview | 6 | |
| Community Relations Assistant Director | Individual Interview | 4 | |
| Community Relations Assistants | Group Interview | 4 | |
| Community Liaison Aides | Group Interview | 12 | |
| NIE Project Administrators | Individual Interview | 2 | |

Table 1 (cont.)

| Data Source | Data-Gathering Technique | Number | Purpose for Which Data was Gathered |
|---|---|---|---|
| Teachers | Individual Interview<br>Mid-Term Input Questionnaire<br>Observation<br>Final Questionnaire | 86<br>106<br>86<br>230 | To collect information on program inputs and processes. |
| Teacher Aides | Mid-Term Questionnaire<br>Observation<br>Final Questionnaire | 62<br>86<br>197 | To collect information on program inputs and processes. |
| Building Administrators (Principals) | Final Questionnaire | 75 | To collect information on program operations, and perceptions of the usefulness of the program. |
| Classroom Teachers | Final Questionnaire | 167 | To collect information on program operations, and perceptions of the usefulness of the program. |
| PAC Members | Final Questionnaire<br>Interview | 10<br>5 | To collect information on effectiveness of the community relations work. |

Table 1 (cont.)

| Data Source | Data-Gathering Technique | Number | | Purpose for Which Data was Gathered |
|---|---|---|---|---|
| Parents | Final Questionnaire | 113 | | To collect information on the perceptions of the value of the program. |
| | | Math | Reading | |
| Students | Metropolitan and California Achievement Tests | 1035 | 7792 | To collect information on Reading achievement. |
| | Performance Objective Summary Sheet | 1343 | 2699 | Math Achievement. |
| | Attendance Report | 2121 | | Patterns of attendance. |
| | Observation | 430 | | Staff-Student interaction patterns. |
| Instructional Environment | Teacher Interviews | 86 | | To collect information on Instructional facilities. |
| | Observation | 86 | | |
| | Questionnaire | 230 | | |
| | Materials and Environment Ratings | 106 | | |

an interview, a schedule was tailored for the staff role of the particular interviewee. The numbers listed in the table indicate the scope of each phase. Copies of the questionnaires and other such instruments were delivered to the Title I Office of Research and Evaluation.

Two other data-gathering techniques require brief explanation. The Performance Objective Summary Sheet refers to a rating scale prepared by the Title I Office of Research and Evaluation and completed by the teachers for each participant. Attendance refers to the records of attendance compiled for the participants on forms prepared by the Title I Office of Research and Evaluation. Rating scales and attendance data for students representing all classes in the three components were selected for analysis as follows:

Elementary Reading:

All Performance Objective Summary Sheets and attendance records in every tenth school selected at random. (Total sample - 1,114)

Elementary Math:

All Performance Objective Summary Sheets and attendance records from math classes. (Total - 1,343)

Middle School Reading:

All Performance Objective Summary Sheets and attendance records in half of the schools selected at random. (Total sample - 849)

NIE Project:

All Performance Objective Summary Sheets and attendance records from all classes. (Total - 736)

The children were administered the Mathematics subtests of the California Achievement Tests, 1970 edition, or the Reading subtests of the Metropolitan Achievement Tests, 1970 edition in October, 1976 and May, 1977. Teachers administered the tests as specified by the publishers. All tests were machine scored. The pre-tests of the Metropolitan Tests were scored by MRC of Iowa. The post-tests of the Metropolitan Tests were scored by the Boston School Department's data processing center. The pre-test and post-test of the California Tests were scored by the publisher. The Title I Office of Research and Evaluation in the Boston Public Schools was responsible for administering all tests except the May administration of the Metropolitan Tests, which was the regular city-wide testing program. The Office delivered the standard score results to the evaluators after the tests were scored.

The results were analyzed statistically through correlated t tests between pre- and post-test standard scores. The pre- and post-test scores were compared across all schools for each grade. The test results were summarized in terms of grade equivalent, percentile and NCE gains between pre- and post-tests and average monthly gains in grade equivalent as required by the state Department of Education. In addition, at each grade level, separate analyses were made of student achievement in reading under NCEC Reading Lab and Alphabus instructional programs.

## Health Education Program

The evaluation plan included the following activities: interviews with program personnel; construction and administration of questionnaires for parents, building administrators, and school nurses; and an examination of the program's records.

Program personnel were interviewed twice--in March and again in June--to gather data concerning program operation and activities. Interview data were also used to aid in questionnaire construction.

Questionnaires were administered to building administrators and nurses in schools in which the Health Education Program was active. Questionnaires were also mailed to a sample of 100 parents of the students who participated in the program.

## ELEMENTARY ENRICHMENT PROGRAM
## READING AND MATHEMATICS

### Description of Program

Table 2 presents an overview of the operation of the Elementary Enrichment Program. Table 3 lists the schools and the number of staff providing reading and math services in the schools. The Reading program operated in 97 elementary schools including 67 public, 27 parochial and three private schools. The Mathematics program operated in 34 of the 97 schools--23 public and 11 parochial. Approximately 10,200 students were served by both programs--8,600 in Reading and 1,600 in Math. The instructional staff was composed of 215 reading teachers and 40 math teachers. Each teacher was assisted by an instructional aide.

Table 2

Overview of Elementary Enrichment Program*

| Schools | | Teachers | Aides |
|---|---|---|---|
| | | Reading | |
| Public | 67 | 164 | 164 |
| Parochial | 27 | 48 | 48 |
| Private | 3 | 3 | 3 |
| | | Mathematics | |
| Public | 23 | 29 | 29 |
| Parochial | 11 | 11 | 11 |

Totals

| Schools | | Teachers and Aides | |
|---|---|---|---|
| Public | 67 | Reading | 215 |
| Parochial | 27 | Mathematics | 40 |
| Private | 3 | Total | 255 |
| Total | 97 | | |

* Data as of February, 1977 provided by Title I office.

Table 3

Schools Served by and Staff of Elementary Enrichment Program*

| School | Number of Teachers | | Number of Aides |
|---|---|---|---|
| | Reading | Math | |
| Public | | | |
| Abrahams | 1 | | 1 |
| Agassiz | 5 | 2 | 7 |
| Aligheri | 1 | | 1 |
| Audobon | | 1 | 1 |
| Baldwin | 2 | | 1 |
| Barrett | 1 | | 1 |
| Bigelow | 3 | 1 | 4 |
| Blackstone | 4 | | 4 |
| Bowditch | 2 | 1 | 3 |
| Bradford | 5[a] | | 6 |
| Brooks | 4 | | 4 |
| Clap | 2 | | 2 |
| Condon | 4 | | 4 |
| Curley, James M. | 3 | | 3 |
| Dever | 4[a] | 2 | 6 |
| Dickerman | 4 | | 4 |
| Eliot | 2 | 1 | 3 |
| Ellis | 2 | 1 | 3 |
| Emerson | 2 | | 2 |
| Endicott | 2[b] | | 1[c] |
| Everett | 2 | | 2 |
| Farragut | 2 | 1 | 3 |
| Fenwick | 2 | | 2 |
| Fifield | 2 | | 2 |
| Fuller | 2 | | 2 |
| Gardner | 3 | | 3 |
| Garfield | 4 | 1 | 5 |
| Greenwood, Sarah | 2 | | 2 |
| Guild | 2[b] | | 1[c] |
| Hale | 2[d] | | 2 |
| Haley | 2 | | 2 |
| Hennigan | 4 | | 4 |

* Data as of February, 1977 provided by Title I office.

Table 3 (cont.)

| School | Number of Teachers | | Number of Aides |
|---|---|---|---|
| | Reading | Math | |
| Public (cont.) | | | |
| Hernandez | 1 | | 1 |
| Higginson | 2 | | 2 |
| Holland | 5 | 3 | 8 |
| Hurley | 4 | 1 | 5 |
| Jackson-Mann | 2 | | 2 |
| Kennedy | 3 | 2 | 5 |
| Kent | 2 | 1 | 3 |
| Lyman | 2 | | 2 |
| Marshall | 5 | | 5 |
| Mason | 3 | | 3 |
| Mather | 3 | 2 | 5 |
| McKay | 2 | | 2 |
| McKinley | 1 | | 1 |
| Mendell | 2 | | 2 |
| Milmore | 2 | | 2 |
| Motley | 1 | | 1 |
| Oak Square | 1 | | 1 |
| Ohrenberger | 1 | | 1 |
| O'Reilly | 2 | 1 | 3 |
| Paine | 1 | 1 | 2 |
| Parkman | 2 | 1 | 3 |
| Perkins | 2 | | 2 |
| Prince | 1 | | 1 |
| Quincy | 3 | | 3 |
| Rochambeau | 2 | 1 | 3 |
| Russell | 2 | 1 | 3 |
| Shaw | 3 | | 3 |
| Stone | 2 | | 2 |
| Storrow | 1 | | 1 |
| Tobin | 4 | 1 | 5 |
| Trotter | 4 | 1 | 5 |
| Tuckerman | 1 | | 1 |
| Tynan | 4 | 1 | 5 |
| Warren-Prescott | 3 | | 3 |
| Winthrop | 3 | | 3 |

Table 3 (cont.)

| School | Number of Teachers: Reading | Math | Number of Aides |
|---|---|---|---|
| **Parochial** | | | |
| Blessed Sacrament | 2 | | 2 |
| Cathedral | 2 | | 2 |
| East Boston Central Catholic | | 1 | 1 |
| Gate of Heaven | 2 | | 2 |
| Our Lady of Lourdes | 2 | | 2 |
| Our Lady of Perpetual Help | 2 | 1 | 3 |
| St. Ambrose | 2 | 1 | 3 |
| St. Anthony (Allston) | 2 | | 2 |
| St. Anthony (No. End) | 2 | | 2 |
| St. Augustine | 2 | 1 | 3 |
| St. Brigid | 1 | | 1 |
| St. Catherine | 1 | 1 | 2 |
| St. Columbkille | 2 | | 2 |
| St. Francis de Sales (Charlestown) | 1 | | 1 |
| St. Francis de Sales (Roxbury) | 1 | | 1 |
| St. John (No. End) | 2 | | 2 |
| St. John (Roxbury) | 1 | | 1 |
| St. Joseph | 1 | | 1 |
| St. Kevin | 3 | 1 | 4 |
| St. Margaret | 2 | 1 | 3 |
| St. Mark | 2[b] | | 1[c] |
| St. Mary | 1 | 1 | 2 |
| St. Matthew | 1 | 1 | 2 |
| St. Patrick | 3 | 1 | 4 |
| St. Peter (Dorchester) | 2 | | 2 |
| St. Peter (So. Boston) | 1 | | 1 |
| St. William | 2 | 1 | 3 |
| **Private** | | | |
| Berea | 1 | | 1 |
| Highland Park | 1 | | 1 |
| Roxbury Community | 1 | | 1 |

[a] Includes two New Century Lab teachers.
[b] Alphabus program - two teachers served the Endicott, Guild, and St. Mark's Schools.
[c] One Alphabus driver served in the program in three schools noted above.
[d] Includes one New Century Lab teacher.

There were three basic modes of instruction: (1) The major instructional approach was an individualized system in which a teacher and aide served a total of 42 students in six 45-minute periods, five days per week, (2) The New Century Reading Lab which operated in three schools and served a total of 100 or 180 students per day depending upon the size of the Lab in five 50-minute periods, and (3) The Alphabus program which served 82 students in three schools on a part-time basis.

In all modes, the focus was upon meeting the needs of the individual student. The New Century Lab is designed to individualize the instructional process completely with each child working at his/her own level and pace. The Alphabus program was designed to meet the needs of schools with space limitations. It is a mobile reading lab in which two experienced teachers utilized specially prepared materials, equipment and games. To accomplish individualization in the non-Lab mode, a complete instructional system has been developed. The system includes informal and standardized diagnostic tests to identify strengths and weaknesses, and a systematic lesson plan format - the Individual Prescriptive Work Plan - which, as its name implies, encourages individualization of planning and instruction.

Overall program administration and supervision was the responsibility of a central administrative component; but more particularly an Acting Associate Director-Elementary Enrichment and four Assistant Directors-Enrichment served the administrative requirements of the Elementary Enrichment Program and six

Assistant Directors-Staff Development were responsible for instructional supervision and staff training. Selected children who participated in the Elementary Enrichment Program also were served by the Health Education Program. (Evaluation of the Health Education Program is presented later in the report.) Also involved with the Enrichment Program (and with all Programs in the Title I Project) were the Community Relations Department and Parent Advisory Council. Selected aspects of the operation of these latter two groups are also discussed in this report.

## Evaluation of Program Inputs and Processes

For the purpose of this section of the report, inputs are defined as those factors which the school department assigns to the program (e.g., facilities, materials, aides, etc.); processes are the functional, operational aspects (e.g., supervision, instruction, scheduling, etc.). The results reported in this part are based upon interviews, questionnaires, records, and on-site observations.

### Administration and Supervision

Administration and supervision responsibilities were shared among the Acting Associate Director-Enrichment, four Assistant Directors-Enrichment and six Assistant Directors-Staff Development. The Acting Associate Director and Assistant Directors-Enrichment were primarily concerned with administrative functions, while the Assistant Directors-Staff Development were responsible for supervision of instruction.

Program administration and supervision of staff are key elements in the success of any program, and were well received by those involved in the program. Almost all of the staff (98%) reported that the Title I guidelines had been clearly explained to them. Ninety-two percent of the Title I teachers indicated that the Title I Program was well organized. Only 4 of the reading teachers and 1 math teacher (representing approximately 2% of the teaching staff) expressed dissatisfaction with the program's organization. Eighty-two percent of the teachers felt that the Title I administration was responsive to their needs, and 86% also indicated that the building principals were both cooperative and helpful.

Building principals were also pleased with the administration of the Title I program. Ninety-one percent of the principals reported that the communication between themselves and the Title I administration was sufficient, and 96% reported satisfactory cooperation with the Title I administration. Only 2 building administrators felt that they had not been kept adequately informed about the operation of the Title I Program, while approximately 93% noted that the amount of information they had received during the year had been satisfactory.

Supervision of instruction, the primary responsibility of the Staff Development Assistant Directors, was also cited favorably by teachers and principals. Supervision was accomplished by regular visits to the teachers to observe their teaching and review their planning, and also by in-service training. In addition, teachers were also provided with detailed Self-Evaluation Checklists to assist their own professional development. The Assistant Directors-Staff Development have developed a unique system of diagnosis, planning, and instruction. The instructional system, as exemplified in the "Time and Process Schedule" and accompanying documents, is a highly organized and systematic approach to individualizing remedial instruction. The system is exemplary and worthy of dissemination and replication. All but a few reading teachers (representing approximately 2% of the staff) indicated that they had received adequate supervision during the year, and were satisfied with the assistance provided them by their Title I supervisor. Ninety-three percent of the reading teachers, and 9 out of 10 math teachers reported that their Title I supervisor was responsive to their needs. Similarly,

the majority of building principals (approximately 92%) were also satisfied with the supervision of their Title I teachers.

Although the supervision of the program was, in general, well received by the large majority of the staff, a substantial minority of teachers (approximately 24%) still expressed some concern for assistance in establishing programs for their students. About one-fourth of the reading teachers, and one-fifth of the math teachers indicated they could have used more help in establishing programs for their students this year. Quite possibly, these were the teachers who were new to Title I this year and who found it difficult to implement the instructional design of the Title I program. While special training was provided early in the school year for these teachers, it is not unexpected that, given the complexity of the system, there would be some difficulty in establishing programs for their students.

Communication

Since the Title I program is designed as a "pull-out" program, it is imperative that good communication and cooperation exist between the Title I staff and regular classroom teachers. Thus, it is important to note that the majority of Title I teachers were satisfied with the communication that exists between themselves and classroom teachers. Nine out of 10 classroom teachers, and 85% of the building administrators confirmed the report of the Title I teachers noting that the communication and cooperation between the Title I staff and classroom teachers

was good. In addition, 99% of the building administrators felt that there was sufficient communication between themselves and the Title I teachers in their schools.

Further evidence of the cooperation and communication between classroom and Title I teachers is provided by the fact that 76% of the classroom teachers and 68% of the building principals did not feel that the students' participation in the Title I program interfered substantially with the regular classroom activities. In addition, 64% of the Title I reading teachers and 77% of the math teachers reported that they had had the full cooperation of classroom teachers in diagnosing the needs of their students.

More than two-thirds of the Title I teachers reported that there was adequate discussion of student progress between themselves and classroom teachers. However, approximately 25% of the reading and math teachers indicated that they were dissatisfied with the amount of discussion of student progress they had with classroom teachers. Concerning this issue, only 32% of the Title I staff reported that the classroom teachers had used the comment section of the bimonthly report to respond to the report or comment on student needs. Since a substantial minority of Title I teachers were not satisfied with the degree of communication concerning diagnosis of student needs and discussion of student progress, it is not surprising that nearly 43% of the reading teachers and 36% of the math teachers still feel there is a need for better communication between the Title I and classroom teachers.

The need for better communication between Title I teachers and classroom teachers is an often repeated problem in Title I programs, but not one that is easily solved. The basic issue is time or opportunity for communication--Title I teachers have more time for communication than classroom teachers. Although the issue is almost unsolvable in the ordinary school setting, school administrators and staff need to devise extraordinary strategies to overcome this difficulty.

The communication among the Title I staff throughout the city was perceived as slightly less satisfactory than last year, despite the small group workshops held for teachers in the Spring. Sixty percent of the reading teachers and slightly more than half of the math teachers felt that there was adequate opportunity for exchange of ideas, materials, and methods among Title I teachers in the city. Approximately one-third of these teachers felt that the opportunities for exchanging teaching techniques and materials was still inadequate. As found last year, math teachers were much stronger in their request for more communication, as over two-thirds of the math staff as opposed to one-third of the reading teachers reported that a need existed for better communication among Title I teachers in the target area schools.

Facilities

Facilities available to the elementary Title I teachers varied widely, but were quite satisfactory. Eighty-two percent of all of the Title I teachers reported that their classroom teaching facilities were adequate for effective instruction.

Only 17% of the teachers were dissatisfied with the instructional facilities provided them.

Table 4 presents the descriptions of their teaching environment provided by the elementary teachers in March. The principal areas of concern dealt with size (accommodations for more than one group), acoustics, and material storage space. However, the environmental factors were, for the most part, rated favorably.

Table 4

Descriptions of the Environment of the Title I Program as Provided by Elementary Title I Teachers

| | | | |
|---|---|---|---|
| Accommodations: | Classroom-81% | Hallway-0% | Other-19% |
| Room Size: | Excellent-55% | Adequate-40% | Inadequate-5% |
| Seating: | Fixed Seats-0% | Moveable-100% | Both-0% |
| Accommodations for more than one group: | Good-60% | Fair-20% | Poor-20% |
| Acoustics: | Good-58% | Fair-25% | Poor-17% |
| Lighting: | Good-82% | Fair-13% | Poor-5% |
| Distractions: | Minimal-55% | Acceptable-35% | Excessive-10% |
| Temperature: | Too Hot-19% | Comfort Range-72% | Too Cold-9% |
| Humidity: | Dry-29% | Moderate-69% | Damp-2% |
| Material Storage Space: | Excellent-38% | Adequate-47% | Inadequate-15% |

In-Service Training

In addition to the orientation and training sessions held at the beginning of the school year, the Title I staff were provided with in-service training during the year.

In October, the Assistant Directors--Staff Development conducted a workshop for Title I reading teachers concerned with individualizing instruction; in November a similar workshop was held for math teachers. In the Spring, a particularly successful group of workshops was held for the teachers and aides. At this time, eight days were scheduled for the reading teachers to participate in small group workshops dealing with specific reading skill areas. The groups were kept small to encourage interaction between the staff by scheduling teachers from only 7-16 schools per day, and the workshops were repeated for the eight groups of approximately thirty teachers accompanied by their aides. A similar two day series was scheduled for math teachers.

Prior to attending these workshops, teachers were requested to indicate their preferences for the topics to be scheduled. The teachers were then assigned to a choice of three seminars during the morning of the workshops based upon their own selection. For the reading teachers, these seminars were: Literal and Interpretive Comprehension, Critical Thinking, Vocabulary-Primary, Vocabulary-Elementary, Context Clues, Structural Analysis, Study Skills, Maps and Graphs, Discrimination - Auditory and Visual. Topics for the math teachers were: Numeration, Addition and Subtraction, Multiplication and Division, Fractions and

Decimals, Measurement and Geometry. In addition, the morning was devoted to a review of performance objectives and a sharing of instructional devices made by teachers and aides. The afternoons were primarily "Make it and Take it" sessions where teachers were able to examine the large number of instructional games and other devices assembled and prepared by the Assistant Directors-Staff Development and to fashion those most appropriate for their own needs.

In general, 91% of the reading teachers, and 84% of the math teachers found the material and topics of the in-service meetings useful. General suggestions offered by teachers for future in-service meeting topics focused on testing for student weaknesses, diagnosis of learning disabilities, and new materials workshops.

Data obtained for the evaluation forms distributed by the Assistant Directors-Staff Development at the end of the small group workshops held in the Spring also revealed an extremely positive response to the training. When asked what they liked best about the in-service, the majority of the reading teachers indicated the sharing of ideas and the small groups. Others reported working on projects and games, the choice of seminar, and the instruction by the Assistant Directors-Staff Development. The principal limitation cited by the reading teachers was "not enough time,"--further testimony to the value of the workshops. Suggestions for future workshops drew several responses, but "more of the same" was the suggestion offered by the majority. Other

suggestions were: to hold the workshops earlier in the year, to include specific reading levels, and to have more time.

The math teachers also reported the sharing of ideas and the small groups as the features they liked best. The display of new materials was also a strong feature. They too felt that insufficient time was the principal limitation, and their suggestions for future workshops were to have similar workshops, to have them earlier in the year, and to continue to generate more ideas and games.

The success of the Spring workshops undoubtedly accounts for the increase in teacher satisfaction with in-service training when compared with last year's results.

As noted in past evaluations, all training is done by the Assistant Directors-Staff Development, and while not disparaging their efforts (the data reported above speak to their quality) it would seem reasonable to utilize consultants from local universities or other school systems from time to time. Consultants can often bring new ideas or perspectives based upon their own experiences and training. The opportunity to use consultants for in-service training should be considered and only a small amount of money would have to be expended for this purpose.

Instruction

To facilitate the remediation of skills of the Title I students, a complete instructional system had been designed for both reading and math instruction.

A standardized diagnostic test (the Sucher-Allred Reading Placement Inventory, informal diagnostic tests specifically prepared for the program (Title I Informal Diagnostic Tests of Reading Skills, Title I Informal Diagnostic Tasks for Reading Readiness, and the Informal Diagnostic Test of Math Objectives) and consultation with classroom teachers were used to identify student strengths and weaknesses. The Individual Prescriptive Work Plan, a systematic lesson plan format, was devised by the Assistant Directors-Staff Development with the help of experienced teachers over the past several years. This format was designed to encourage the diagnosis-planning-evaluation cycle of the instructional system, as well as the sequential development of skills, independent work, reinforcement, and efficient use of teacher and teacher aide time. Reading and Math Skill Profiles were also an integral part of the system.

Compliance with the instructional procedures was high among the teachers. All of the math teachers, and 96% of the reading teachers reported that they had identified individual learning needs for each child in their classes. Eighty-five percent of the reading teachers and all but one of the math teachers indicated that they planned an individual instructional sequence for each child they taught. Eighty-seven percent of the teachers reported that most of their lessons were not conducted for the class group as a whole. In the same vein, all of the math teachers and 98% of the reading instructors noted that their lessons provided for individualized instruction whether in a small group or one-to-one situation. Three-fourths of the reading teachers, and 9 out of 10 of the math teachers

considered the low student-teacher ratio (seven students per teacher and aide) appropriate for the type of instruction required by the children. The proportion of teachers dissatisfied with the student-teacher ratio was down from last year, with about one-fifth of the reading instructors and 9% of the math teachers reporting it as inappropriate for the type of individualized instruction needed by students enrolled in the Title I program.

The use of the Individual Prescriptive Work Plan, as a form, was not required of teachers for the first time this year. However, the elements of the Plan were required in their planning, and criteria for planning were established based on these elements by the Assistant Directors-Staff Development. In light of the facts that the Plan per se was not required and the negative reactions of the teachers to the Plan last year, it is surprising to note that approximately three-fourths of the teachers reported using the Individual Prescriptive Work Plan regularly. As in past years, however, a large number of teachers (nearly half of the reading and one-fourth of the math teachers) were not satisfied with it as an appropriate tool for planning individualized instruction. It is obvious that the teachers' dissatisfaction is not with the Plan itself, rather it is with the individual planning process. Planning individually for approximately 40 children is undoubtedly difficult, nevertheless it is a necessary condition to successful remediation of the students' deficits. There is no easy way in which to accomplish this type of planning, and the supervisors must continue, as they have in the past, to reinforce with teachers the importance of planning for individualized instruction, its difficulty notwithstanding.

Observation of reading classes revealed that, on the average, five students were in attendance. About one-half of the time students were in two or more groups, and in about one-third of the classes visited an average of three students were working independently. Table 5 presents a record of the major student and adult activities observed in classes visited. Students worked in workbooks or on worksheets about 40% of the time observed; one-third of the time they were reading orally. In 18% of the observations students were answering questions; 8% of the time they were utilizing games, and 3% of the time they were using some type of AV equipment. The overwhelming majority of students working independently were using worksheets or workbooks.

Seventy-five percent of the time teachers were observed in such direct instructional activities as explaining, tutoring, demonstrating and questioning. Seventeen percent of the time they were supervising student work, and in 8% of the cases preparing materials. On the other hand, aides spent about half of their time in direct instructional activities and the other half in such support activities as correcting worksheets, preparing displays, completing forms, and operating machines. (Aides were not present in 10% of the classes visited.)

Observation of math classes found also that, on the average, five students were in attendance. In contrast with the reading classes, more than two-thirds of the time students were in two or more groups, and in one out of two classes, an average of two students were working independently. As shown in Table 6,

Table 5

Record of Activities Observed in Title I Reading Classes

| Student Activity | Percent of Observations: Teacher Group | Aide Group | Students Working Independently | Total |
|---|---|---|---|---|
| 1. Worksheets/Workbooks | 23 | 40 | 87 | 40 |
| 2. Oral Reading | 41 | 40 | 0 | 33 |
| 3. Silent Reading | 0 | 0 | 0 | 0 |
| 4. Games | 5 | 10 | 13 | 8 |
| 5. A/V Equipment | 5 | 0 | 0 | 3 |
| 6. Student Answering Questions | 27 | 10 | 0 | 18 |
| 7. Discussion | 0 | 0 | 0 | 0 |
| 8. Board Work | 0 | 0 | 0 | 0 |
| 9. Drawing, Coloring | 0 | 0 | 0 | 0 |

| Adult Activity | Teacher | Aide |
|---|---|---|
| 10. Explaining, Tutoring, Demonstrating, Questioning | 75 | 35 |
| 11. Supervising Student Work | 17 | 15 |
| 12. Reading to Children | 0 | 0 |
| 13. Testing | 0 | 0 |
| 14. Preparing Materials | 8 | 0 |
| 15. Escorting Pupils | 0 | 0 |
| 16. Distributing Materials | 0 | 0 |

Table 5 (cont.)

| Adult Activity | Percent of Observations | |
|---|---|---|
| | Teacher | Aide |
| 17. Preparing Displays | 0 | 10 |
| 18. Correcting Worksheets | 0 | 30 |
| 19. Completing Records, Forms, Attendance | 0 | 5 |
| 20. Planning Instruction | 0 | 0 |
| 21. Housekeeping | 0 | 0 |
| 22. Operating Machines | 0 | 5 |
| 23. Other | 0 | 0 |

Table 6

Record of Activities Observed in Title I Math Classes

| Student Activity | Percent of Observations: Teacher Group | Aide Group | Students Working Independently | Total |
|---|---|---|---|---|
| 1. Worksheets/Workbooks | 41 | 64 | 67 | 54 |
| 2. Games | 12 | 18 | 33 | 16 |
| 3. A/V Equipment | 0 | 0 | 0 | 0 |
| 4. Student Answering Questions | 41 | 9 | 0 | 21 |
| 5. Discussions | 0 | 0 | 0 | 0 |
| 6. Board Work | 6 | 9 | 0 | 5 |
| 7. Drawing, Coloring | 0 | 0 | 0 | 0 |

| Adult Activity | Teacher | Aide |
|---|---|---|
| 8. Explaining, Tutoring, Demonstrating, Questioning | 78 | 47 |
| 9. Supervising Student Work | 17 | 18 |
| 10. Reading to Children | 0 | 0 |
| 11. Testing | 6 | 6 |
| 12. Preparing Materials | 0 | 0 |
| 13. Escorting Pupils | 0 | 0 |
| 14. Distributing Materials | 0 | 0 |
| 15. Preparing Displays | 0 | 0 |
| 16. Correcting Worksheets | 0 | 11 |

Table 6 (cont.)

| Adult Activity | Percent of Observations | |
|---|---|---|
| | Teacher | Aide |
| 17. Completing Records, Forms, Attendance | 0 | 0 |
| 18. Planning Instruction | 0 | 0 |
| 19. Housekeeping | 0 | 11 |
| 20. Operating Machines | 0 | 0 |
| 21. Other | 0 | 6 |

95% of the time, teachers were observed in direct instructional activities with students. Aides were observed in direct instructional tasks 65% of the time and performing other support tasks the remainder of the time. (Aides were not present in 5% of the classes visited.)

Students were observed using workbooks or worksheets 54% of the time, on the whole. Twenty-one percent of the time students were answering questions, 16% of the time using games, and five percent of the time they were working on problems at the blackboard. Two-thirds of the students working independently were using workbooks or worksheets and one-third were using games.

Materials

A wide variety of materials were available to teachers in the program and were observed during visits to the classes. Three-fourths of the teachers indicated that sufficient instructional materials were available to them to conduct their classes effectively. However, approximately one-fifth of the reading and math teachers felt that the amount of materials available were insufficient for their teaching purposes. Although 80% of the teachers reported general school supplies were available in sufficient quantities, 13% of the reading teachers and 20% of the math teachers were still dissatisfied with the availability of general school supplies.

Nearly one-fourth of the teachers (26% of the reading teachers and only 13% of the math teachers) were not satisfied with the quality of the instructional materials that were available for their use. (The proportion of reading teachers dissatisfied with the quality of appropriate materials is higher than that reported last year.)

Importantly, due to the workshops, 85% of the teachers reported that they had been able to share some of the good materials prepared by other Title I teachers. Only 10% of the reading teachers, and 9% of the math teachers disagreed. However, half of the reading teachers, and 77% of the math teachers felt that there should be more commercially prepared materials available for their classroom use. Additional materials for instruction at grades 4, 5, and 6 (e.g., workbooks and higher level reading texts) were among the most frequent requests teachers made for commercially prepared materials. Other requests made by reading teachers included more individualized and self-correcting games (particularly for older children), phonics books, and a variety of audio-visual materials. Additional materials requested by math teachers included masters, more manipulative and measurement games, flashcards and filmstrips with tapes.

The instructional materials teachers cited as most effective this year were: Cambridge Work-A-Texts (Reading and Math), the Ginn Reading Series, Barnell-Loft Series, McCormack-Mathers Math materials, Readers Digest materials, and the Silver-Burdett Math kits.

Teachers concern with materials is a chronic issue in most educational programs. In this case the majority are satisfied; nevertheless a large minority remain dissatisfied, and their opinions should be regarded as signals to alert the administration to continually review the materials in use. The Title I administration has worked diligently to include teachers in the process of obtaining materials not only by asking all teachers to complete an inventory and request for materials, but also by implementing a committee screening process including teachers as recommended by the evaluators last year.

Since it is difficult for teachers, in general, to examine a wide variety of materials, they often believe that there are better materials available than they are using without having evidence of such materials. A materials resource center, centrally located, would help to alleviate this problem. This center, possibly under the direction of the Assistant Directors-Staff Development, would house copies not only of those materials in use in the program, but examples of other commercially available materials and teacher made materials. It could become, if used properly, a continuous training center where teachers could constantly obtain new ideas for the use and creation of materials for their classes.

Reading teachers were also questioned concerning whether Title I classes should use the same reading materials as regular classes. Four out of five teachers responded that Title I classes should <u>not</u> use the same reading series or materials to remediate the students' deficiencies that are used in the regular

classrooms. Teachers held disparate views on the benefits of using the same materials. Ten percent reported they were not sure. Thirty percent of the teachers felt that only a few of their students would benefit more if the same reading series were used in Title I classes that the students used in their regular classes; 22% felt that some of their students would benefit more; while another 23% felt that none of their students would benefit more. A fifth of the teachers responded that they were not sure what effect, if any, this would have on their students. However, if one were to use the same reading series in the Title I classes that is used in the regular classrooms, over three-fourths of the teachers felt it would be most beneficial for first grade students. Interestingly, Title I teachers were undecided whether the use of the same reading series that is used in the regular classroom would encourage more communication and cooperation with the classroom teachers. In any case, 90% of the Title I reading teachers would prefer that the Title I classes use a <u>different</u> reading series from that used in the regular classrooms.

A sample of Title I elementary reading teachers were selected to evaluate the Ginn Communication Skills Program being piloted in their classes. Eight teachers reported that they had used the Reading component of the program, and several others noted using the oral expression, composition, and spelling components as well. However, there was no concensus of opinion among the teachers regarding the utility of the Ginn Communication Skills Program.

While three teachers reported that they had found the reading component most effective, two teachers indicated that they had found this component least effective. Teachers comments regarding the strengths and weaknesses of the Skills Program were similarly divided. While the sequencing of skills and story content were noted by some teachers as strengths of the program, an equal number considered these same qualities as the major weaknesses in the materials. Finally, half of the teachers reported that they would use the Communication Skills Program again next year if given the choice, and the other half said they would not.

Morale

In general, the morale of the Title I staff was rated high by 85% of the teachers. Although nine out of 10 of the reading teachers reported that morale was high, only 69% of the math teachers did. Nine percent of the math teachers responded negatively and 22% were not sure of the morale of the Title I staff. Ninety-two percent of the teachers reported that they were happy working in the program and all but 2% (two reading teachers and one math teacher) felt that they were accomplishing something worthwhile as a Title I staff member. Ninety-six percent of the reading teachers, and all but one of the math teachers expressed confidence in their qualifications and abilities to teach their subject in the Title I Program.

Objectives

All of the Title I math teachers, and 98% of the reading teachers reported that they fully understood the objectives of the Title I program. In addition, a

clear understanding of the Title I objectives was also reported by all of the principals and 94% of the classroom teachers. All but one of the PAC members responded that the objectives of Title I were clear to them also. Almost all of the Title I staff (90%), 92% of the principals, and over 85% of the classroom teachers believed that the objectives of the program met the needs of the students. Members of the PAC unanimously agreed that the services provided through the Title I program met the needs of the children.

Specific performance objectives, developed and refined over several years of program operation, were part of the Title I instructional system. The majority of reading teachers (85%) and all but one of the math teachers reported that they used the specific performance objectives for each child with whom they worked. Eighty-six percent of the reading teachers and 97% of the math teachers reported that they found these objectives helpful as a guide to both teaching and evaluating their students.

Orientation

Orientation to the program was generally considered satisfactory. Eighty-seven percent of the teachers, and 88% of the teacher aides were pleased with the orientation process. In general, those teachers who reported that they were dissatisfied commented that they had attended similar Title I orientations in previous years. Other comments made concerned the lack of orientation for teachers and aides who began instruction later in the year, and the problem of overcrowding during orientation exercises.

Parental Involvement

Community Relations Department. The Community Relations Department consists of an Acting Assistant Director, four Community Relations Assistants, and 12 Community Liaison Aides (CLA's). At present there is one vacant position among the five proposed positions for Community Relations Assistants. The department serves all of the components in the Title I project. The focus of this department's efforts is to implement the federal and state mandates to establish representative local, district, and city-wide Parent Advisory Councils (PAC's). The Community Relations Department serves as a liaison between Title I administration and parents in the community.

The Acting Assistant Director was responsible for setting up schedules for staff meetings, coordinating the activities of the Community Relations Assistants, and preparing reports for administrators of the Title I program and for the state. The duties of the Community Relations Assistants were reported as: distribution of materials, working with CLA's, attending PAC meetings, and helping parents disseminate information. The duties of the CLA's included: establishing direct contact with parents, making arrangements for meetings, and contacting delegates to run PAC meetings. Each Community Relations Assistant oversees the activities of a number of CLA's.

CLA's are assigned to schools in one district, for the most part. Some CLA's are assigned to schools to which they are readily accessible, while some

Table 7

Number of Meetings, Attendees, Schools, Districts, and PAC's Reported by Each CLA

| CLA | Number of Meetings | Average Number of Parents Attending Meetings | Number of Schools Served | Number of Districts Served | Number of PAC's | Some Representation |
|---|---|---|---|---|---|---|
| 1 | 65 | 6 | 10 | 1 | 10 | - |
| 2 | 55 | 15 | 10 | 1 | 10 | - |
| 3 | 45 | 5 | 9 | 1 | 6 | 3 |
| 4 | 70 | 8 | 10 | 3 | 10 | - |
| 5 | 70 | 10 | 10 | 1 | 10 | - |
| 6 | 100 | 15 | 10 | 1 | 10 | - |
| 7 | 65 | 8 | 10 | 1 | 10 | - |
| 8 | 50 | 6 | 10 | 1 | 7 | 3 |
| 9 | 40 | 10 | 8 | 1 | 7 | 1 |
| 10 | 65 | 6 | 10 | NA** | 7 | 1 |
| 11 and 12* | 68 | 7 | 18 | 9 | 6 | 5 |
| Total | - | - | 115 | - | 93 | 13 |
| Average | 63 | 8 | - | - | - | - |

* Middle Schools only

** Data not available

are assigned to schools in different parts of the city, although these schools may be in one district. Two CLA's are assigned to middle schools across the city; all other CLA's serve 8-10 elementary schools each, generally in one district as noted. CLA's reported that the rationale for the assignments was unclear to them and that they did not contribute to the final assignment decision.

During interviews in May, data concerning meetings, parental attendance, schools and districts served, and established PAC's were reported by CLA's. According to Table 7, there have been an average of 63 meetings held for each CLA, with an average of 8-9 parents attending. PAC's were established in 93 (81%) of the schools and "representatives" were reported in another 13 (12%). (It should be noted that, as was found last year, parent involvement at the middle school level was lower than at the elementary level.) In fact, according to the CLA's there are PAC's at 90% of the elementary Schools. Sixty-four percent of the principals reported that the CLA's were helpful in establishing the PAC's at their schools. In addition, three-fourths of the parents responding to questionnaires reported knowledge of a Title I PAC in their children's school. Furthermore, 63% of the parents said that they had been contacted by the PAC this year and approximately 59% reported that they knew what the role of the Title I PAC is.

Table 8 describes the status of PAC development at the district level. It is obvious from Table 8 that development of the district level PAC's was not extremely successful. Only one meeting of the district PAC was reported for five of the districts with attendance ranging from 2-40 parents. Two meetings were held in two of the districts, and in two other districts no meetings were held. For the most part, meetings were held to hold elections only.

Table 8

Number of Meetings and Number of those Attending
District-Wide PAC Meeting

| District | Number of Meetings | Average Number of Parents Attending |
|---|---|---|
| 1 | 1 | 30 |
| 2 | 1 | 2 |
| 3 | none reported | - |
| 4 | none reported | - |
| 5 | 1 | 38 |
| 6 | 2 | 40 |
| 7 | 2 | 32 |
| 8 | 1 | 16 |
| 9 | 1 | NA* |

* Not available

According to the CLA's, they have been hampered in meeting their goal of full implementation of local PAC's by several factors: the proliferation of programs demanding parental involvement thereby reducing the number of parents available to serve on PAC's; the number of parents who work and are unable to attend meetings during the day; and the lack of transportation to

meetings for parents. In addition to these problems, it was reported that there were a number of parents who had not received their expenses from last year and that this discouraged them from further participation. Community Relations Assistants also indicated that many parents in the PAC move to paying jobs in the school system thereby reducing the number of parents available to serve on PAC's.

Despite the difficulties encountered in establishing PAC's, accomplishments of the Community Relations Department were cited by both the CLA's and Community Relations Assistants. The CLA's perceive their main strength to be their availability to parents. The CLA's reported that they have a better working relationship with each other this year than in the past. Staff meetings were cited as a principal reason for the improved relationship. At these meetings, CLA's share their approaches to attracting parents to PAC meetings.

The Community Relations Assistants indicated that this year's major accomplishments were: the establishment of councils in the schools, the establishment of district parent councils, and holding regularly scheduled staff meetings.

Recommendations for improvement in the Community Relations Department were offered by the Community Relations Assistants, who suggested that systematic mailing procedures be established for contacting parents about meetings and workshops. In order to increase the number of local PAC's, the Community

Relations Assistants also suggested that a number of schools with a limited number of Title I students be allowed to join together to form a multi-school PAC. Also, both Community Relations Assistants and CLA's indicated that they would like to participate in the process of assignment to schools.

Parent Advisory Council (City-wide). The current chairperson of the city-wide PAC indicated that there should be 32 members on the city-wide PAC, although only 10-15 parents regularly attended meetings. According to the Acting Assistant Director of the Department, there are, in fact, 27 of 30 possible members of the PAC. The PAC was elected at meetings of district PAC members in December and January. In March, PAC officers were elected. The election, however, was not without difficulties. First, only seven of nine districts were represented. Secondly, only 20 members attended the election meeting; eight of these 20 members were representatives from parochial schools; six members were Black, 14 were white. Finally, some parents objected to final racial composition of the officers--four out of five were white; others objected to the process by which some parents were elected. In general, five problems with the city-wide PAC were of concern to the five members of the PAC who were interviewed in March. These were:

1. The city-wide PAC does not adequately represent the ethnic makeup of all Title I students.

2. The city-wide PAC does not have an adequate percentage of parents of Title I students.

3. There are city-wide PAC members who have not gone through the mandated process of being elected at each level necessary to reach the city-wide PAC.

4. Some Community Relations Assistants and CLA's do not fulfill their roles by working effectively with the PAC's.

5. A satisfactory level of parent involvement has not been achieved at the Middle School level.

The Research and Evaluation Subcommittee of the PAC has been active again this year. The Subcommittee reported that the Research and Evaluation Office was most cooperative in providing the needed assistance in conducting a parent survey of needs in the Title I program and a visitation program in which 112 Title I schools were visited. The visits were limited to 20-minute observations of Title I classrooms. One administrator from the Title I Project, one member of the city-wide PAC, and one parent from each school visited the classrooms. Parents were trained to rate the facilities, materials, and equipment and to record the kinds of activities and interactions they observed. The city-wide PAC members saw the main value in this observation to be the education of parents about the Title I program.

Questionnaires were mailed to city-wide PAC members concerning the PAC's activities; 10 were returned. All PAC members responding the the questionnaire indicated that PAC meetings were conveniently scheduled, and all but one parent indicated that they were well organized. Only three of the ten parents thought that meetings should be held more often.

Almost all PAC members said that they understood the objectives of the Title I Program. In addition, all of these parents indicated that they had been provided copies of the Commonwealth's PAC guidelines. However, only half of the parents said they had been provided access to official applications and documents concerning the Title I Program. Nine out of ten parents reported that they had visited the program.

PAC members felt that the PAC had been influential in involving more Title I parents with the Title I project. They reported that the major activities of the PAC this year were the same as last year: identifying needs of children, encouraging the active involvement of parents of children in the Title I program, and reviewing Title I project plans developed by the school department.

While six of the parents felt that the PAC supplied the administration with relevant information concerning the specific needs in the Title I project, only four felt that the administration of the Title I program had paid much attention to their input.

In responding to a series of questions concerning PAC development, the PAC members did not seem well informed on the status of the local and district PAC's. Three reported good involvement in the local PAC's, one reported poor involvement, and the rest did not respond at all. Members also did not respond to the question of whether PAC members had to be elected from the local and district PAC's to the city-wide PAC. PAC members also did not know how many district-wide PAC's had been established, but three reported they were functioning well. Finally, there was little agreement among parents on how many members actually attended city-wide PAC meetings.

Despite the lack of attention to their input, the apparent confusion of PAC members over the status of local, district and city-wide PAC's, and other problems cited earlier, seven PAC members of 10 responding felt that

communication and cooperation with the Community Relations Department was adequate. This is considerably different from last year when 70% felt it was not adequate.

Parental Communication. Communication with parents is the essential ingredient to successful parental involvement. The PAC's, though mandated, can be considered no more than formalized, superficial indexes of parental involvement. Active participation of parents in the Title I Program implies and requires a high degree of communication between the parents and the school personnel. Similar to last year's findings, though the majority of Title I teachers reported satisfaction with the reporting of childrens' progress in the Title I program (a progress report was sent home three times in the year), nearly half of them felt that they had not had sufficient communication with parents. Only 38% of the Title I teachers (37% of the reading teachers and 40% of the math teachers) felt that the parents of their students had taken an active interest in the Title I program. On the average, reading teachers reported meeting with 8 parents (down slightly from last year), and math teachers noted that they had met on the average of 10 parents of students (up from nine last year). Despite the high level of dissatisfaction of teachers with parental interest and communication, 98% of the parents were pleased with the amount of information they had received regarding their child's progress in the Title I program.

The charge to the Community Relations Department is clear, and is repeated from last year's report--to overcome the low level of interest and

actual involvement of the parents of participating children, to increase communication between parents and Title I teachers, in other words to devise ways to increase the degree of real parental involvement apart from the establishment of formalized Parent Advisory Councils.

Program Initiation and Attendance

The program began instruction much earlier this year than last. For the most part, the program was operational within the first month of school. Typically, reading and math students began instruction the week of September 27 (obtained for a sample of 732 reading and 663 math students selected at random from teacher records). Math students started only slightly later than reading students since students are screened first for reading instruction which is the priority need. As shown in Figure 1, the largest proportion of students were enrolled by the end of September with 90% of the reading students and 85% of the math students enrolled by October 15. Only a small proportion of students were enrolled after November 1. The average total days of attendance through the end of May for reading students was 124 days and for math students 112 days. Average attendance rates were higher than last year--85% for reading students and 75% for math students.

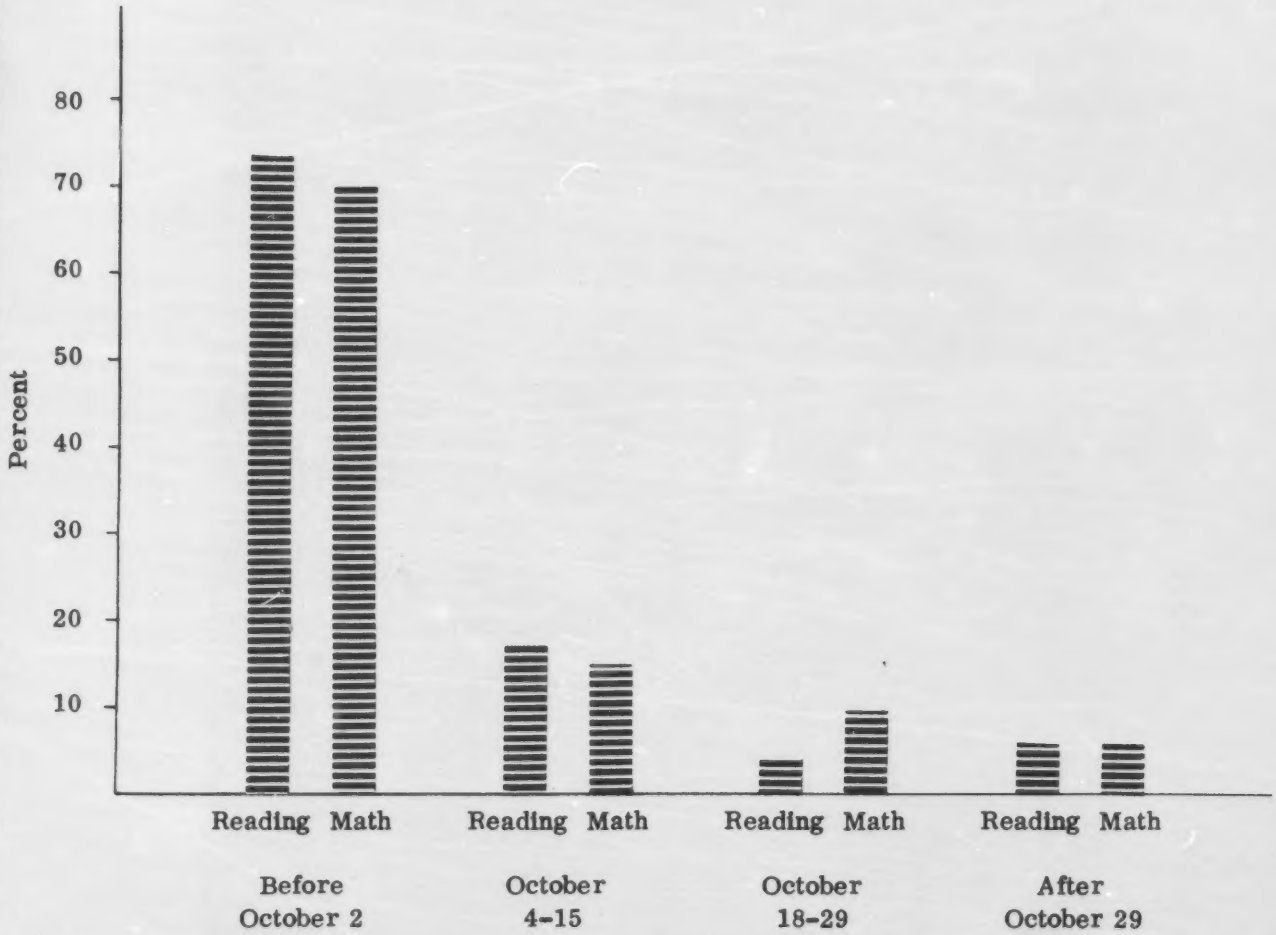


Figure 1: Starting dates for reading and math students

Special Programs

New Century Reading Labs. The Reading Learning Centers, a product of the New Century Education Corporation, provide a highly individualized, audio-visual, automated approach to reading instruction. Each Center is fully equipped with curriculum materials and the necessary A-V equipment by the corporation. Commonly termed the New Century Reading Labs, they were located in the Bradford, Dever, and Hale elementary schools. The Labs at both the Bradford and Dever Schools were staffed by two teachers and two aides while the staff at the smaller Lab at the Hale School consisted of one teacher and an aide. Three of the Lab teachers were new to the Labs this year. They received one week of training at the beginning of the year, which they reported was satisfactory.

All of the Lab teachers reported that they were satisfied with the organization and supervision of the program. While all five of the teachers agreed that the Title I administration was responsive to their needs, one teacher was dissatisfied with the cooperation and assistance she received from the building principal.

All of the teachers were satisfied with the communication they had with classroom teachers, however, only one of the Lab teachers reported that classroom teachers used the comment section of the bimonthly report to respond to the report or comment on students' needs. Thus, as did other Title I teachers, two Lab teachers felt that more discussion of student progress with the classroom

teachers was necessary. In addition, all of the Lab teachers indicated that there were not enough opportunities for exchange of ideas, materials, and methods among Title I Lab teachers city-wide. Three of the Lab teachers felt that a need existed for better communication among Title I Lab teachers in the target area schools. The remaining two were not sure.

All of the teachers were satisfied that instructional periods scheduled for the Lab were of appropriate length; and four of them felt that the student-teacher ratio was appropriate for the type of instruction needed by the students. One was uncertain. Although most teachers indicated that the Lab approach was inappropriate for teaching first grade students, they all agreed that this type of instructional approach was worthwhile for the second grade students in their school. Most of the Lab teachers agreed that the Lab's instructional system met the needs of the majority of children being served.

The opinions of Lab teachers were divided (two teachers were satisfied, two were not satisfied and one was not sure) regarding the adequacy of the placement tests used to identify the child's level in the system, and the effectiveness of the Lab's instruction for the more seriously deficient students. Similarly, while three teachers reported that the Lab's system of placement and instruction provided them with enough information about the child's specific remedial needs, two others disagreed. Two teachers reported that the standardized achievement test used to evaluate the program did not adequately measure the outcomes of the program and the remaining three were not sure.

Three of the teachers reported that the Lab's teaching approach was effective throughout the entire year, and that students who have been in the Lab perform as well as (or better than) their first year of participation. However, two of the five teachers felt that students tire of the Lab as the year progresses, with one teacher noting that it seriously affected student performance in the Lab.

Three teachers felt that the overall instruction received in the Lab was at least as effective as instruction provided by a teacher and an aide in a traditional Title I remedial reading class with a low pupil-teacher ratio. However, most were unsure whether the Lab was more effective in remediating specific skill deficiencies than the traditional Title I instruction. In fact, all of the Lab teachers reported that approximately 10% of their students would benefit more by remedial instruction of the type provided by the regular Title I classes.

All of the Lab teachers reported that they had sufficient materials to conduct their Lab classes effectively and only one teacher felt that general school supplies were insufficient. They all reported that the Lab facilities were adequate, and none of the teachers were dissatisfied with the maintenance of the equipment or the materials inventory for the year.

All of the Lab teachers reported that they were happy working in the Title I Program. However, one teacher was discontent in her role as a Lab teacher, and did not find the role professionally rewarding. In addition, two other teachers reported they were not sure whether their role as a Title I Lab teacher was

professionally rewarding to them. Nevertheless, four of the five teachers felt that, as a Title I Lab teacher, they were accomplishing something worthwile. One teacher was not sure.

Three of the teachers were satisfied with the reporting of children's progress in the Title I program. One was not sure and another was dissatisfied. Only two teachers felt that they had had sufficient communication with parents of their students. Although three of the teachers were satisfied, two Lab teachers felt that parents had not taken an active interest in the Title I program. On the average, teachers reported meeting with approximately 25-30 parents of students during the year.

Overall, the teachers were satisfied with the progress made by the students and felt that most of their students had made progress in one of their weak areas. They felt that, for the most part, students enjoyed coming to the Lab. All the teachers agreed that the students had benefitted substantially from ther participation in the program, and in most cases the program had a beneficial effect on the students' self-concept and attitudes toward school. Two of the teachers noted that they would like to see some type of assessment of students' self-concept and attitudes toward school included as part of the evaluation of the Title I program.

Regarding the New Century Lab teacher aides, all of the teachers reported good rapport between themselves and teacher aides. They felt that the presence

of the aides made it possible for more individualized instruction and considered the aides an asset to the program.

All of the aides reported that they understood their role in the program and that they had been provided with accurate information regarding the nature of their duties and responsibilities. Most aides were satisfied with the direction given them from the teacher with whom they worked and felt that their teacher had been provided with accurate information regarding their jobs. All of the aides reported a good relationship with their Title I teacher and they felt that teachers used their services effectively.

The morale of the teacher aides was rated high. They all reported working well with students and, as a result, felt that the students were glad that they were in the classroom to assist them. All of the aides said they enjoyed working in the Title I program.

The teacher aides expressed confidence in their abilities to handle the responsibilities of their job, and they all felt that their training was adequate to permit them to handle the instruction in which they are involved. Only one aide expressed a desire for additional Title I training to keep New Century Lab aides up to date on program changes.

Suggestions offered by Lab teachers, for improving the New Century Reading Labs were:

> Let's get some decent performance objectives! How about a team of Lab teachers to write them during the summer.
>
> The Lab's learning structure does not allow for intrinsic motivation, since it works on a reward base. Allowing children time in the activity center when teacher and child agree that the child has reached an opportune time for this. Do away with the point system as a reward system.
>
> Sometimes we wait too long for orders from New York. Also we get questioned on the amount of material we order! We should know what we need! More material needed for beginning first graders - we need more primary programs developed in the primary areas so these children can be serviced.

Alphabus. This year was the fourth year Alphabus operated in the school system, and its third year under Title I funding. Alphabus is a mobile reading lab operating in a gaily painted and refurbished bus. Its program was conducted by two certified teachers who are graduate students at Lesley College, and supervised by a staff member from the College. The Alphabus program is a specially designed individualized approach utilizing "audio-visual equipment and special materials including 'The Reading Series,' a linguistic approach to reading, and 'Big Deal' which consists of six games designed to reinforce the language skills of reading, writing and spelling." (Excerpted from Alphabus!, a descriptive pamphlet prepared for the Boston Public Schools, Department of Title I Programs.)

The Alphabus program began much earlier this year and functioned for almost the entire school year--beginning in October and ending June 10th. Alphabus stopped at the Endicott School 3 days per week, at St. Mark's School two mornings per week, and at the Guild School two afternoons per week. These assignments were made by the Title I administration to schools with severe space limitations and based upon the number of Title I children at each school. Alphabus served 38 students at the Endicott School, 22 at St. Mark's and 22 at the Guild School. The program's teachers served eight students in each of six 45 minute periods per day; thus, each student was able to work in Alphabus two or three times a week.

The Alphabus teachers reported that they had sufficient opportunity to orient the classroom teachers and principals to the Alphabus program, and that the school personnel understood the objectives of Alphabus. All of the principals and all but two of the teachers responding agreed that they did understand the program's objectives. Further, the Alphabus teachers reported that the objectives were appropriate for the needs of the students. All of the principals concerned, and in contrast to last year when many teachers were not sure of the objectives, all but two teachers believed the objectives of the Alphabus program met the needs of the children. Only one teacher disagreed, and one was uncertain about the appropriateness of the objectives.

The Alphabus teachers were satisfied that the instructional approach of the Alphabus program was appropriate to the students' needs. They agreed that the setting was conducive to student learning, and had no reservations about the use of Alphabus in either cold or very warm weather. They were also satisfied with the instructional materials available to conduct their lessons. However, they were dissatisfied with the number of times per week in which a child can come to Alphabus. They preferred to schedule Alphabus into two schools, and to serve children with the most serious deficiencies up to five times per week.

All but two of the classroom teachers and both Alphabus teachers reported sufficient cooperation and communication between classroom and Alphabus teachers. In contrast to last year, only one principal reported that there was not enough communication between the classroom teachers and the Alphabus teachers. Further, all principals were satisfied with the communication and cooperation between themselves and the Alphabus teachers. Both Alphabus teachers reported that the principals were supportive of the Alphabus program. Two of the three principals also reported sufficient communication with the Title I administration about Alphabus. All of the principals reported that they were kept adequately informed about the operation of the Alphabus program, and, in contrast to last year, all but one of the teachers felt this way. All but two of the teachers and all principals reported that the students' participation in Alphabus did not interfere substantially with the regular classes. Despite the testimony about

the cooperation and communication between teachers and Alphabus staff and the improvements in this area when compared to last year, the Alphabus teachers still perceived a need for increased opportunity to meet with teachers to discuss student progress and to coordinate their programs. In addition, the Alphabus teachers, though satisfied with the reporting of student progress to parents, desired better communication with the parents of their students.

All but three of the classroom teachers, all three administrators, and both Alphabus teachers believed that the children most in need of help were being served in Alphabus. Everyone agreed that the children enjoyed going to Alphabus. Last year about half of the classroom teachers reported improvements in the students' ability to function academically, in their school attitudes and classroom behavior, and in their reading abilities; this year almost all classroom teachers reported that these improvements occurred. All of the administrators also reported significant improvement in academic functioning, reading abilities, and school attitudes and behavior. Further, all but one of the teachers and all principals reported a positive change in self-concept of those students receiving assistance from the Alphabus. Both Alphabus teachers concurred with the teachers' and principals' positive assessment of the effects of the program. The following comments reflect those made about the benefits of the program.

> Fantastic improvement of self-image, confidence, and skills of Alphabus students. (classroom teacher)

> Stimulating, interesting enrichment and remedial program for those students who need help. (principal)

> The program guarantees success and improves the students' self-image. (Alphabus teacher)

There was a startling consensus of opinion about the positive effects on students participating in Alphabus. All but one of the teachers and all principals considered Alphabus a valuable asset to the school and recommended that the Alphabus program continue next year. Comments reflecting their opinions of the value of Alphabus included:

> Work done has been favorable and profitable. May it continue! My appreciation and thanks to those who have made such a program possible . . . (classroom teacher)
>
> It would be great if the Alphabus could come more often . . . (principal)
>
> Children are very interested and anxious to be included in Alphabus. (classroom teacher)
>
> Children have feeling of importance in leaving room for bus - overcomes feeling of failure. (classroom teacher)

Student Evaluation

The majority of Title I teachers (82%) agreed that the process for identifying Title I children selected those who were most in need of help. Similarly, 78% of the classroom teachers and 84% of the building administrators agreed that the Title I program was serving those children most in need of remedial help. Approximately three-fourths of the math teachers, and 73% of the reading teachers reported that the diagnostic tests and devices available adequately identified student strengths and weaknesses. However, slightly less than half of the

teachers felt that the standardized achievement tests used to evaluate the program adequately measured the program outcomes. Reading teachers were more dissatisfied than math teachers, with 48% reporting that they considered the standardized achievement test inadequate for measuring outcomes of the program. Seven out of 10 teachers noted that they would like to see assessment of a student's self-concept included as part of the evaluation of the Title I program. In addition, two-thirds of the math teachers and 56% of the reading teachers expressed a desire for assessment of student attitudes toward school and learning as part of the Title I program evaluation.

Teacher Aides

All of the math teachers, and 93% of the reading teachers reported good rapport with their teacher aides. Nine out of 10 math teachers and 85% of the reading teachers reported using the aide in an instructional capacity more than clerical. (See also Tables 5 and 6.) Ninety-six percent of the teachers felt that the presence of the teacher aide in the classroom made it possible for instruction to be more individualized. All but one of the math teachers and 91% of the reading teachers considered the aides to be an asset to the Title I program.

Ninety-six percent of the teacher aides reported having a good relationship with the Title I teacher with whom they worked. All but a few of the aides reported that they understood their role in the Title I program. Although the majority of aides were experienced and were satisfied with the information

provided them regarding the nature of their duties and responsibilities, 41% of the reading aides and 32% of the math aides would have liked more accurate information concerning their jobs at the beginning of the program. In addition, 35% felt that teachers should be provided with more accurate information regarding the nature of the duties and responsibilities of aides at the beginning of the year.

The overwhelming majority of aides reported that there was good coordination of effort and planning between aides and teachers, and felt that the teacher to whom they were assigned effectively used their services. Only 17% of the aides would have liked more direction from the teacher with whom each worked. Less than 7% of the aides felt that there were times during the day when they had nothing to do.

Nine out of 10 aides rated their morale very high. They reported working well with students and noted that the children were glad that they were there to help them. All of the aides reported that they enjoyed working in the Title I program.

The teacher aides reported spending most of their time in activities involving direct contact with students, and the majority reported spending most of their time teaching. Almost two-thirds of the aides reported that they spend a great deal of their time preparing materials and correcting tests and papers. All but

three reading aides felt that their presence in the Title I classroom significantly increased the amount of individualized instruction and small group activity available to the students. (See also Tables 5 and 6.)

The aides unanimously agreed that they were competent to handle the responsibilities of their job. Most aides felt that their training was adequate to permit them to handle the instruction in which they are involved. The majority of aides (84% of the reading aides and 68% of the math aides) found the inservice meetings useful. However, two-thirds felt that they could benefit from additional training directed toward improving their role in the Title I project. Some of the suggestions offered by aides for additional training included more workshops in remedial math and reading instruction, training in the proper use of materials and college coursework for aides.

Time

The most common complaint associated with government funded programs is usually the excessive amounts of paperwork required. Seventy-nine percent of the Title I teachers reported that, in general, there was too much paperwork required in this Title I program. The most consistent complaint concerning paperwork that teachers cited was about the Individual Prescriptive Work Plan. (The reader is reminded that the Plan was not required this year and is referred to the early discussion of this issue under Instruction.) Other factors cited were duplication of records and performance objectives, and less frequently mentioned were terminal reports, attendance sheets, questionnaires, and diagnosis reports.

Approximately two-thirds of the Title I teachers reported that there was not enough time available for instructional planning. In addition, 60% of the reading teachers and 72% of the math teachers reported that they did not have sufficient time available to them to complete the paperwork required by Title I. Almost one-third of the reading teachers and one-fourth of the math teachers indicated that they had no time available to them during the day for planning and paperwork, and an additional one-third of the reading teachers and 53% of the math teachers reported less than 30 minutes available. On the other hand, 45% of the reading teachers and one-fifth of the math teachers reported 30 minutes or more available for planning and paperwork. The differences in time available for planning and paperwork reported by teachers across the city, and the discrepancy between reading and math teachers is as puzzling this year as it was last year.

The problem of sufficient time is not due to teachers' participation in non-teaching functions, according to the teachers. Eighty-nine percent of the reading teachers, and 94% of the math teachers reported that they did not regularly assist in such non-teaching functions of the school as recess duty, bus supervision, or playground duty. Although 85% of the principals felt that the Title I teachers should be obliged to assist in the non-teaching functions of the school, 91% of them reported that Title I teachers are not regularly engaged in such activities. Many principals expressed their concern (some quite strongly) regarding the non-teaching responsibilities of the Title I teachers. Typical of the comments made by the principals were:

> Title I teachers should be obliged to assist in non-teaching functions, etc. This is a divisive moral issue.
>
> The Title I teachers are treated like my regular faculty - therefore I really think they should take some duties recess-yard duty at least once a week. To prove we are all equal they should take on some non-teaching functions.

Value of the Program

The value of the Title I program was rated very highly by the overwhelming majority of the Title I staff, classroom teachers, principals, and parents.

All of the principals and 94% of the classroom teachers were satisfied with the work of the Title I staff in their school. Ninety-five percent of the principals and 92% of the classroom teachers considered the Title I teachers a valuable asset to their school. Furthermore, 95% of the administrators and 92% of the classroom teachers recommend that the Title I program continue next year. Typical comments reflecting their opinions were:

> The professional and non-professional staff have trained children excellently behaviorally and academically. (principal)
>
> I am definitely satisfied with the Title I program. I think it has been of tremendous service to the child who needs the most help. (classroom teacher)
>
> We have the greatest teaching team in the city. Thank you. (principal)

Parents, too, commented frequently about the high value they placed on the program. Among their comments were:

Title I has helped my son improve a great deal in Math. I hope the program will continue to be such a success and bring enrichment to many more children.

Title I is one of the best programs to happen to the slower children. I am assured.

I think Title I is the best thing. I wish there were more programs like Title I to help the children who are having problems . . .

## Evaluation of Program Outcomes

### Standardized Reading Tests

As reported previously, the children were administered the Reading subtests of the Metropolitan Achievement Tests, 1970 edition. In grades 2-6, tests were administered in October and May, with seven months of instruction between pre- and post-tests. Post-tests only were administered to grade 1 students.

Gains between pre-test and post-test in grades 2-6 on Word Knowledge, Reading, and Total Reading standard scores were analyzed by means of a t-test for correlated data to determine whether the gains were statistically significant. Means and standard deviations were calculated for the post-tests in grade 1. The following seven analyses were performed:

1) all elementary students in grades 1-6, by grade;
2) public elementary school students in grades 1-5, by grade;
3) parochial elementary school students in grades 1-6, by grade;
4) private elementary school students in grades 1-6, by grade;
5) NCEC participating students in grades 1-5, by grade;
6) Alphabus participating students in grades 1-5, by grade;
7) NIE participating students in grades 1-5, by grade.

The results of the statistical analyses are reported in Tables A-G in Appendix A. Statistically significant gains were found in

1) grades 2-6 for all elementary school students on all subtests;
2) grades 2-5 for all public elementary school students on all subtests;
3) grades 2-6 for all parochial elementary school students on all subtests;
4) grades 2 and 4 only for all private elementary school students on all subtests;
5) grades 2-5 for all NCEC participating students on all subtests;
6) grades 2-5 for Alphabus participating students on all subtests;
7) and grades 2-5 for NIE participating students on all subtests.

The mean grade equivalent scores in Total Reading have been summarized across the seven elementary program groups for which analyses were performed as described above. These results are shown in Table 8, and have been graphically portrayed in Figures 2-7. (The interested reader who may wish to examine the grade equivalent scores for each subtest in each group will find these results in Tables A-G in Appendix B.)

Wide variation in achievement was found among the groups. In grades 2, 5 and 6 all participants achieved, on the average, above the projected rate of gain of .7 months in G. E. score for each month of instruction. Students in grade 2 attained a monthly gain rate of .9 on the average, while the rate for students in grades 5 and 6 was 1.0. Students in grade 4 gained at the rate of .7 G E. months per month of instruction. However, the average gain for grade 3 students was only .4 G. E. months per month of instruction.

Parochial school students tended to achieve both higher pre-test and post-test scores than public school students. While both public and parochial school students in grades 2 and 3 made similar gains, in grades 4 and 5 public school students tended to gain at a faster rate than parochial school students. Private school students tended to score lower than both public and parochial school students and made smaller gains. With the exception of students in grades 2 and 6, the monthly gain rate of private school students did not attain the .7 criterion.

Table 8

Summary of Mean Grade Equivalent Scores in Total Reading
Across Seven Elementary Program Groups

| Group | Pretest G.E. Mean | Posttest G.E. Mean | Mean G.E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Grade 1 | | |
| All Participants | - | 1.6 | - | - |
| Public Schools | - | 1.6 | - | - |
| Parochial Schools | - | 1.7 | - | - |
| Private Schools | - | 1.5 | - | - |
| NCEC Schools | - | 2.2 | - | - |
| Alphabus Schools | - | 1.9 | - | - |
| NIE Schools | - | 1.7 | - | - |
| | | Grade 2 | | |
| All Participants | 1.8 | 2.4 | 0.6 | 0.9 |
| Public Schools | 1.8 | 2.4 | 0.6 | 0.9 |
| Parochial Schools | 1.8 | 2.5 | 0.6 | 0.9 |
| Private Schools | 1.6 | 2.3 | 0.7 | 1.0 |
| NCEC Schools | 2.0 | 2.6 | 0.6 | 0.9 |
| Alphabus Schools | 2.0 | 2.6 | 0.6 | 0.9 |
| NIE Schools | 1.7 | 2.5 | 0.8 | 1.1 |
| | | Grade 3 | | |
| All Participants | 2.5 | 2.8 | 0.3 | 0.4 |
| Public Schools | 2.4 | 2.7 | 0.3 | 0.4 |
| Parochial Schools | 2.7 | 3.0 | 0.3 | 0.4 |
| Private Schools | 2.0 | 2.1 | 0.1 | 0.1 |
| NCEC Schools | 2.7 | 3.1 | 0.4 | 0.6 |
| Alphabus Schools | 2.3 | 3.1 | 0.8 | 1.1 |
| NIE Schools | 2.4 | 2.7 | 0.3 | 0.4 |

Table 8 (cont.)

| Group | Pretest G.E. Mean | Posttest G.E. Mean | Mean G.E. Mean | Monthly Gain Rate |
|---|---|---|---|---|
| | | Grade 4 | | |
| All Participants | 3.0 | 3.5 | 0.5 | 0.7 |
| Public Schools | 2.9 | 3.5 | 0.6 | 0.9 |
| Parochial Schools | 3.3 | 3.7 | 0.4 | 0.6 |
| Private Schools | 2.6 | 3.0 | 0.4 | 0.6 |
| NCEC Schools | 3.2 | 3.7 | 0.5 | 0.7 |
| Alphabus Schools | 2.9 | 3.3 | 0.4 | 0.6 |
| NIE Schools | 2.8 | 3.4 | 0.7 | 1.0 |
| | | Grade 5 | | |
| All Participants | 3.5 | 4.2 | 0.7 | 1.0 |
| Public Schools | 3.3 | 4.1 | 0.8 | 1.1 |
| Parochial Schools | 4.1 | 4.6 | 0.5 | 0.7 |
| Private Schools | 3.2 | 3.4 | 0.2 | 0.3 |
| NCEC Schools | 3.6 | 4.4 | 0.8 | 1.1 |
| Alphabus Schools | 3.2 | 4.1 | 0.9 | 1.3 |
| NIE Schools | 3.3 | 4.1 | 0.8 | 1.1 |
| | | Grade 6 | | |
| All Participants | 4.5 | 5.2 | 0.7 | 1.0 |
| Parochial Schools | 4.5 | 5.2 | 0.7 | 1.0 |
| Private Schools | 2.8 | 3.5 | 0.7 | 1.0 |

Students in the Alphabus program did quite well in comparison to students in the traditional Title I program of instruction. The pre-test scores of Alphabus students tended to be similar to public school students in general, in every grade. The monthly gain rates of Alphabus students exceeded those of all students in

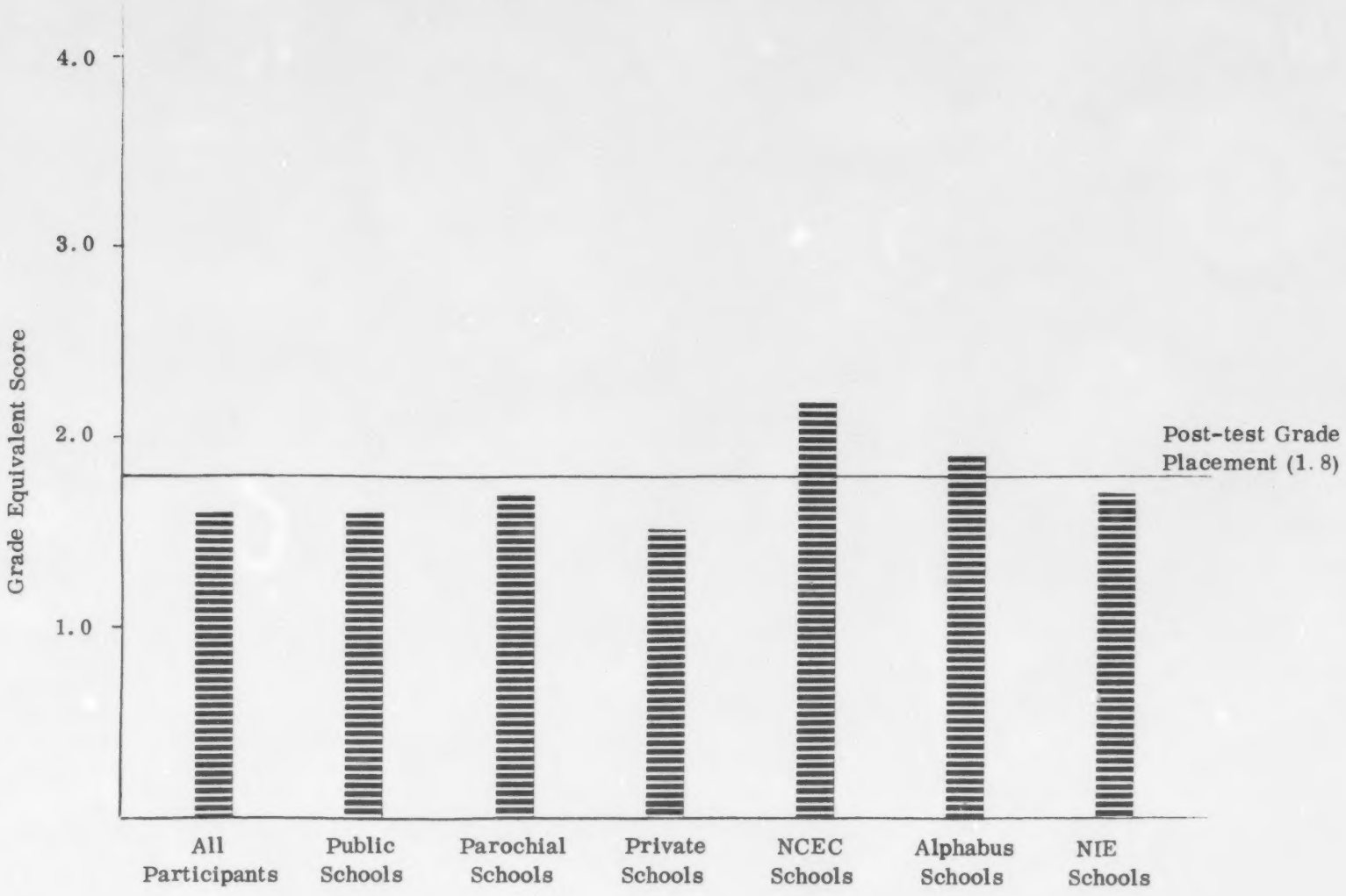


Figure 2: Post-test Grade Equivalent Scores in Reading of Seven Program Groups in Grade 1

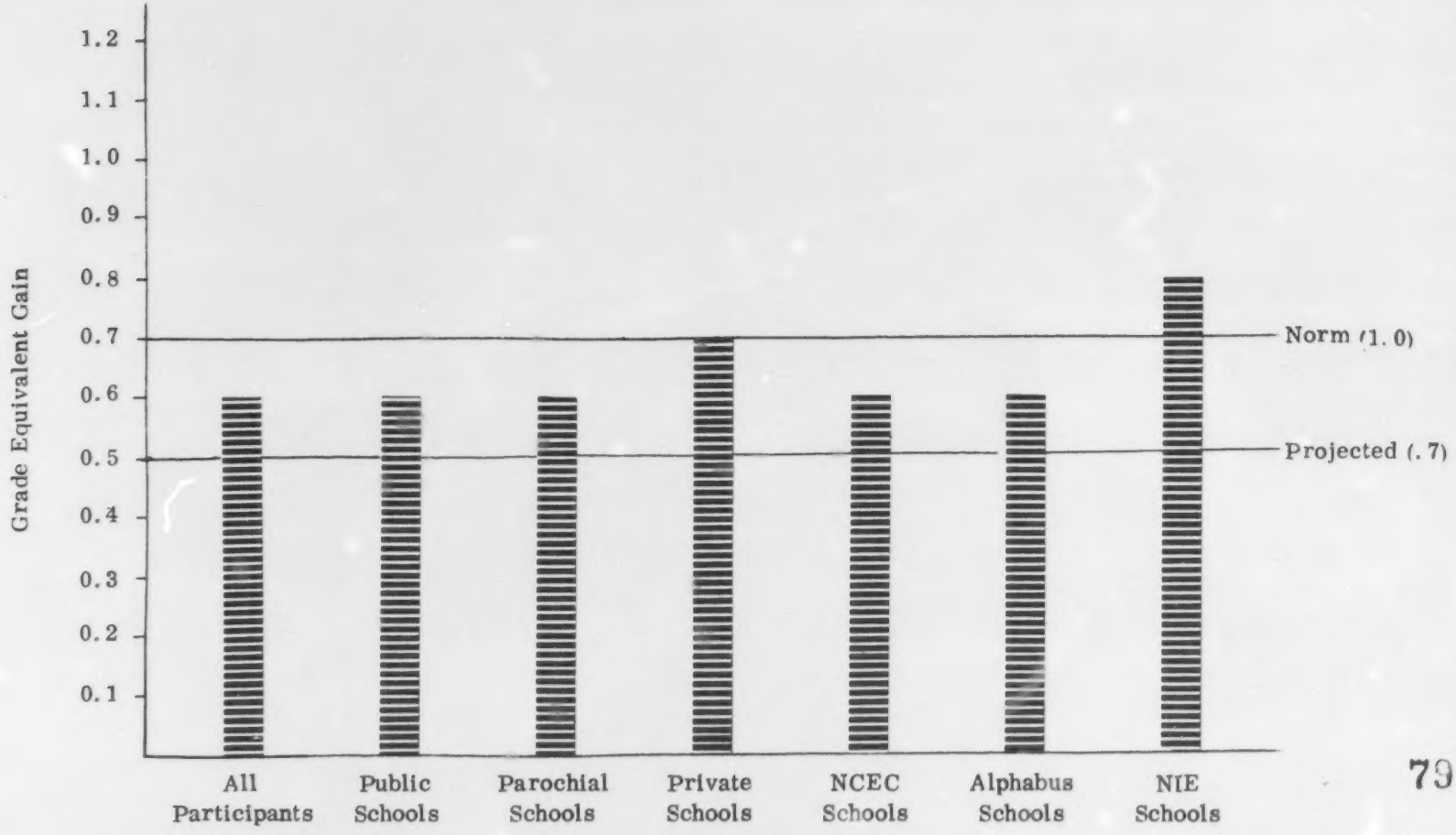


Figure 3: Gains in Total Reading of Seven Elementary Program Groups in Grade 2

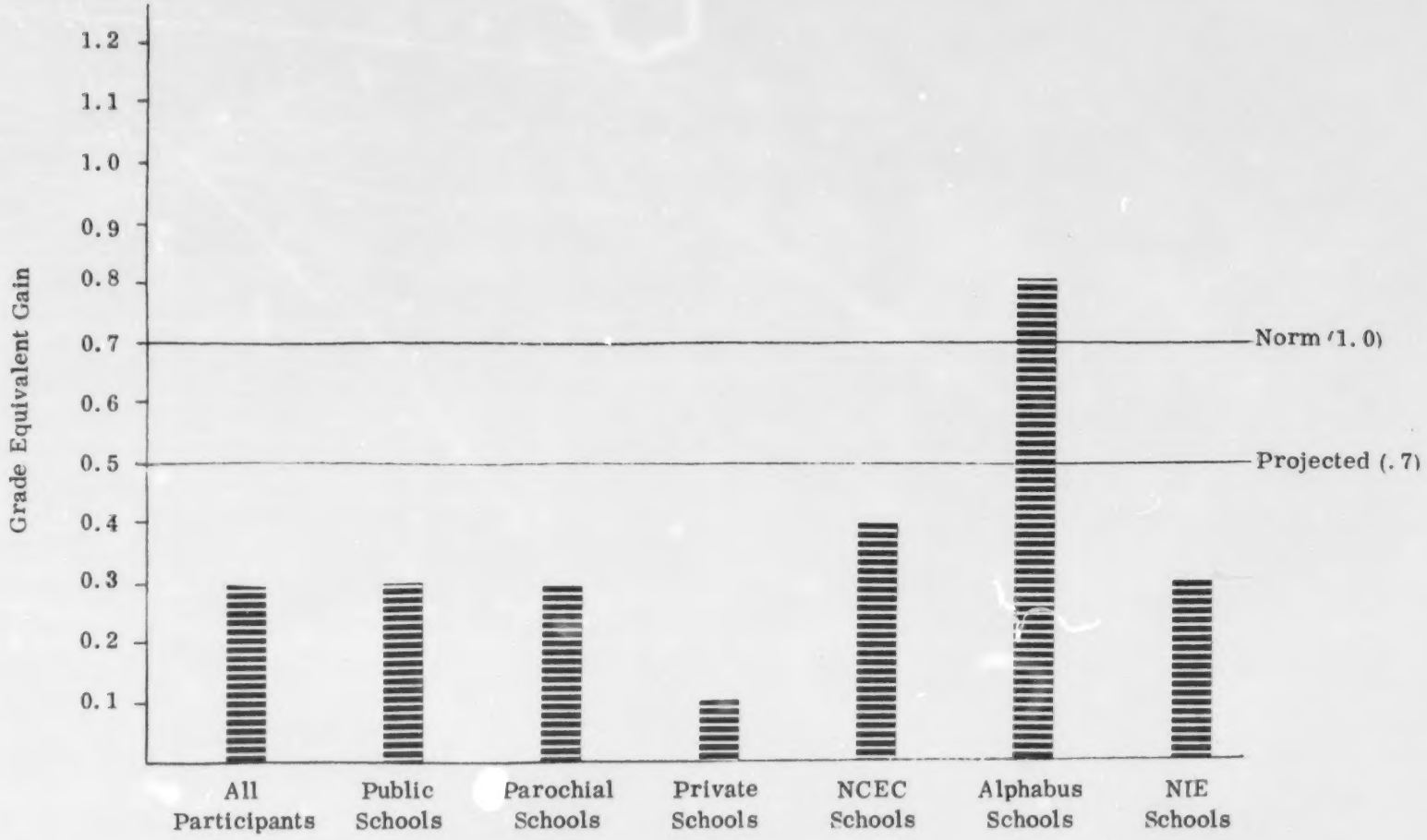


Figure 4: Gains in Total Reading of Seven Elementary Program Groups in Grade 3

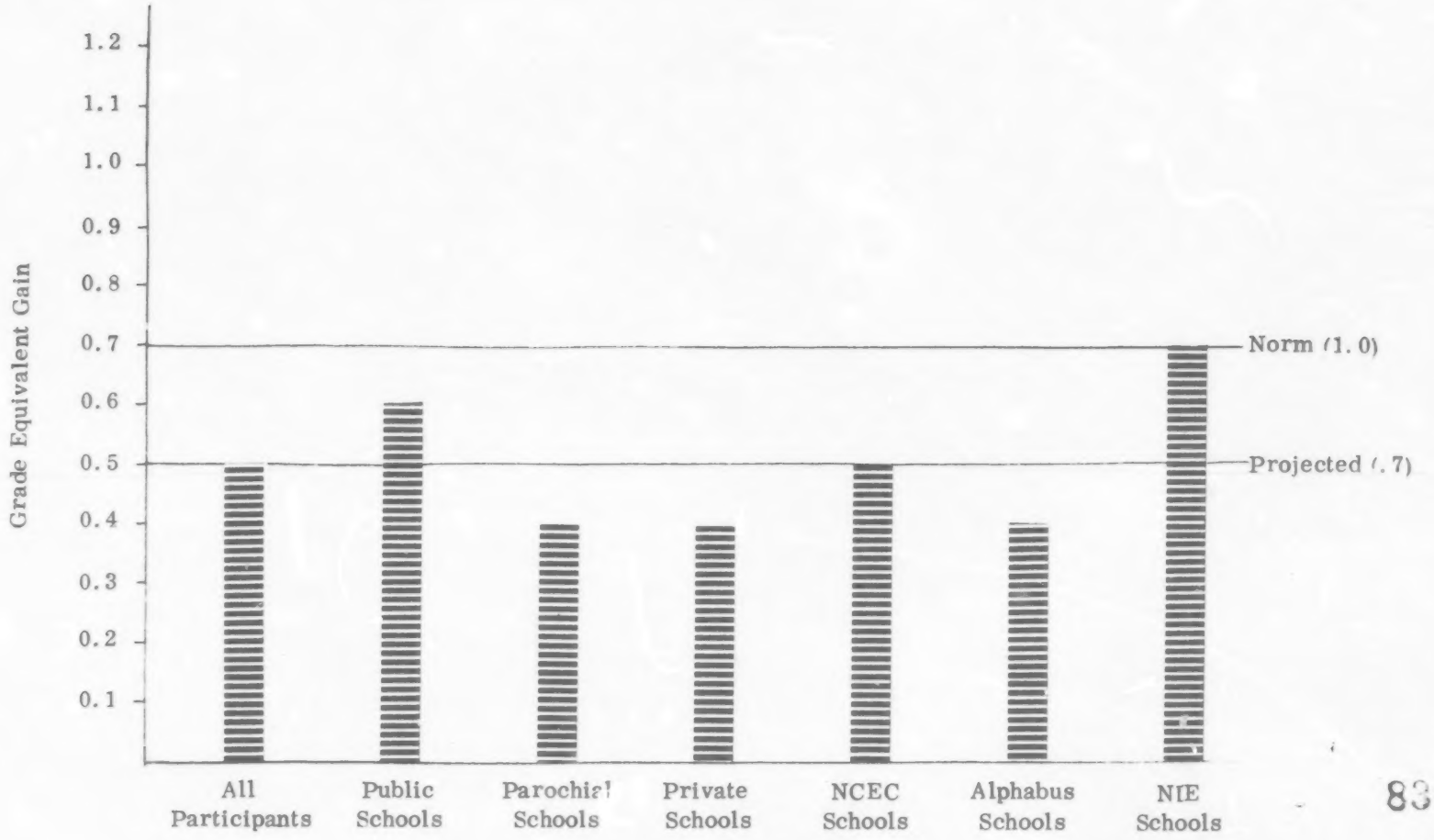


Figure 5: Gains in Total Reading of Seven Elementary Program Groups in Grade 4

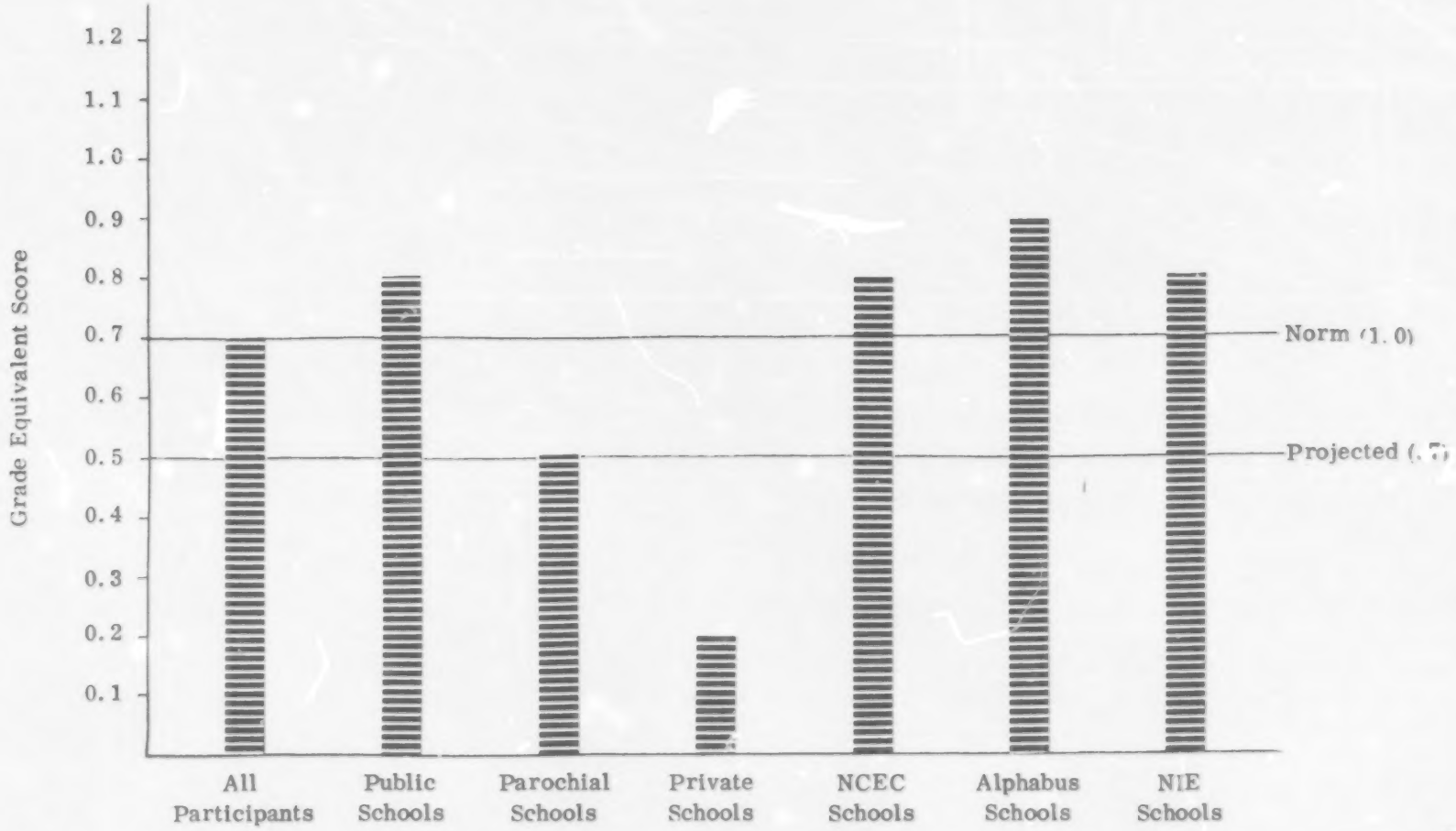


Figure 6: Gains in Total Reading of Seven Elementary Program Groups in Grade 5

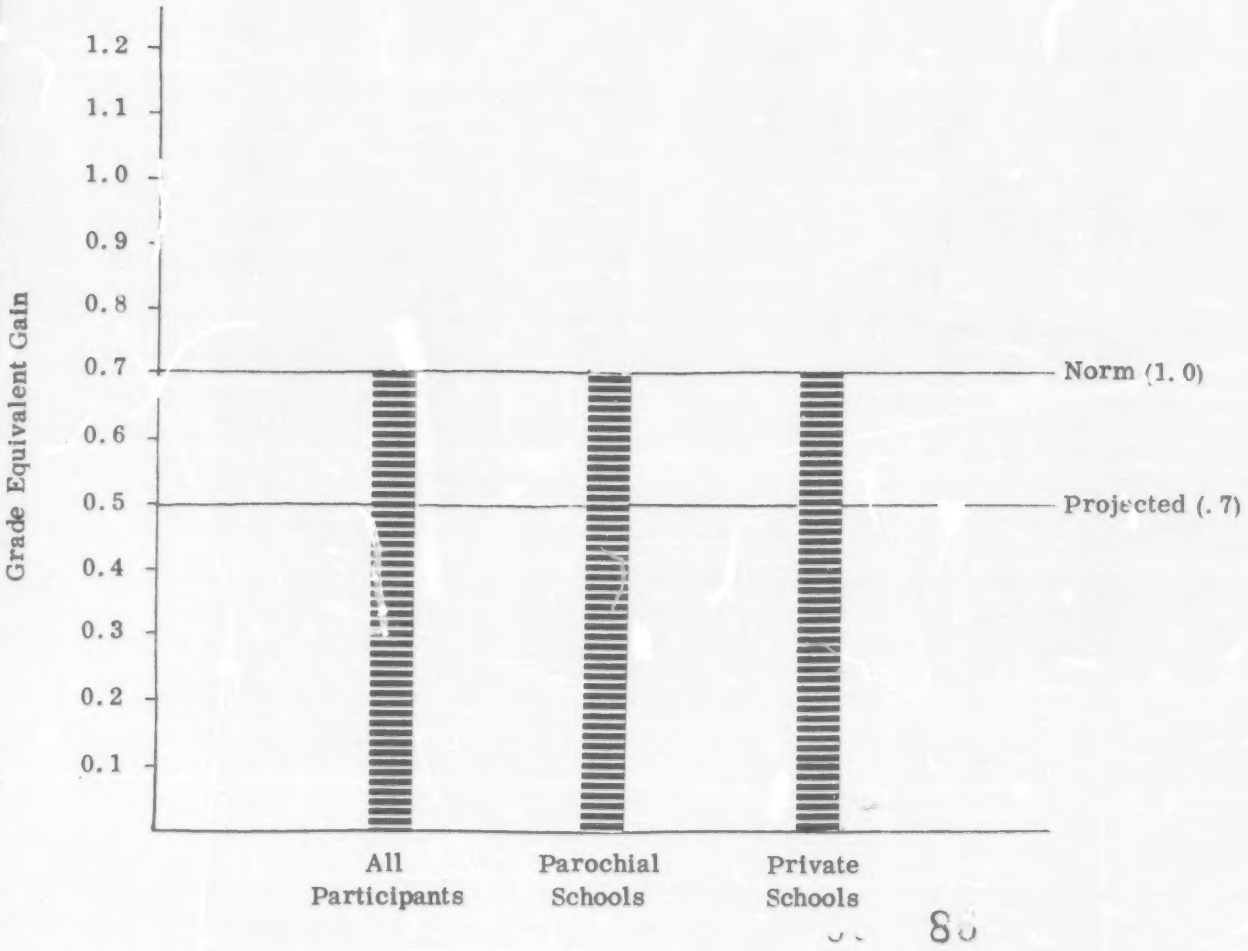




Figure 7: Gains in Total Reading of Three Elementary Program Groups in Grade 6

grades 3 and 5 by attaining monthly gain rates of 1.1 and 1.3 respectively. Only in grade 4 did public school students tend to outperform students in the Alphabus program.

This year, gains for NCEC program students were approximately equal to the gains of other public school students in grades 2 through 5. The monthly gain rates of NCEC students ranged from .6 G.E. months to 1.1 G.E. months per month of instruction. NCEC gains were greater than public school gains in grade 3, but less than the gains made by these students in grade 4. In grades 2 and 5 gains of both groups were equal. It should be noted that NCEC students on the average attained pre-test and post-test scores higher than the other public school students but similar to the parochial school students.

Students in the NIE program did quite well in comparison to students in other groups. While the pre-test scores for NIE students were generally less than or equal to the pre-test scores of other public school students, the monthly gain rate of NIE students equalled or exceeded the rate of gain for the public school students in every grade. Only in grade 3 did NIE program students gain less than 1.0 G.E. units per month of instruction.

In grade 1 where only post-test scores were available, Title I students ended the year at an average of two months below grade level at the time of testing. Parochial school students scored highest (1.7) and private school

students were lowest (1.5) among the three different school populations. In the special programs, NCEC and Alphabus students finished above grade level (2.2 and 1.9 respectively) while NIE students were only one month below grade level.

Further assessment of the degree of achievement of the students, relative to other children their same age and school level, is shown in Table 9. Table 9 shows mean scores for both pre- and post-tests in terms of their national percentile rank and the accompanying NCE scores. (Tables showing percentile and NCE scores on each subtest for each grade level and group are found in Appendix D.) An increase in the percentile standing from pre- to post-test would indicate that the students were achieving more than they had in the past. That is, they would have moved up in standing with respect to the norm group. As the table shows, the children entered the program well below the average (50th percentile) for the most part. Pre-test means ranged from the 2nd to the 42nd percentile, with most below the 30th percentile. While most post-test means still remained below the median nationwide, in the majority of cases students did show a faster rate of achievement in reading level for all grades.

In grades 2, 3, and 6, all participants combined demonstrated a gain in percentile standing. In grades 4 and 5 no change in percentile score was shown. Public school students gained in percentile rank in every grade, as did the NIE

Table 9

Summary of Mean Percentile and NCE Scores in Total Reading
Across Seven Elementary Program Groups

| Group | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|
| | Pre | Post | Gain | Pre | Post | Gain |
| Grade 1 | | | | | | |
| All Participants | - | 32 | - | - | 40.1 | - |
| Public Schools | - | 32 | - | - | 40.1 | - |
| Parochial Schools | - | 40 | - | - | 44.7 | - |
| Private Schools | - | 20 | - | - | 32.3 | - |
| NCEC Schools | - | 78 | - | - | 66.3 | - |
| Alphabus Schools | - | 56 | - | - | 53.2 | - |
| NIE Schools | - | 36 | - | - | 42.5 | - |
| Grade 2 | | | | | | |
| All Participants | 26 | 34 | 8 | 36.5 | 41.3 | 4.8 |
| Public Schools | 24 | 34 | 10 | 35.1 | 41.3 | 6.2 |
| Parochial Schools | 42 | 38 | -4 | 45.8 | 43.6 | -2.2 |
| Private Schools | 20 | 23 | 3 | 32.3 | 34.4 | 2.1 |
| NCEC Schools | 38 | 48 | 10 | 43.6 | 48.9 | 5.3 |
| Alphabus Schools | 42 | 48 | 6 | 45.8 | 48.9 | 3 1 |
| NIE Schools | 26 | 38 | 12 | 36.5 | 43.6 | 7.1 |

Table 9 (cont.)

| Group | Percentile Pre | Percentile Post | Percentile Gain | NCE Pre | NCE Post | NCE Gain |
|---|---|---|---|---|---|---|
| Grade 3 | | | | | | |
| All Participants | 24 | 28 | 4 | 35.1 | 37.7 | 2.6 |
| Public Schools | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| Parochial Schools | 36 | 34 | -2 | 42.5 | 41.3 | -1.2 |
| Private Schools | 10 | 8 | -2 | 23.0 | 20.4 | -2.6 |
| NCEC Schools | 36 | 36 | 0 | 42.5 | 42.5 | 0.0 |
| Alphabus Schools | 16 | 36 | 20 | 29.1 | 42.5 | 13.4 |
| NIE Schools | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| Grade 4 | | | | | | |
| All Participants | 24 | 24 | 0 | 35.1 | 35.1 | 0.0 |
| Public Schools | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| Parochial Schools | 32 | 30 | -2 | 40.1 | 39.0 | -1.1 |
| Private Schools | 16 | 14 | -2 | 29.1 | 27.2 | -1.9 |
| NCEC Schools | 28 | 42 | 14 | 37.7 | 45.8 | 8.1 |
| Alphabus Schools | 22 | 20 | -2 | 33.7 | 32.3 | -1.4 |
| NIE Schools | 20 | 22 | 2 | 27.2 | 33.7 | 6.5 |

Table 9 (cont.)

| Group | Percentile Pre | Percentile Post | Percentile Gain | NCE Pre | NCE Post | NCE Gain |
|---|---|---|---|---|---|---|
| Grade 5 | | | | | | |
| All Participants | 18 | 18 | 0 | 30.7 | 30.7 | 0.0 |
| Public Schools | 14 | 18 | 4 | 27.2 | 30.7 | 3.5 |
| Parochial Schools | 28 | 28 | 0 | 37.7 | 37.7 | 0.0 |
| Private Schools | 12 | 8 | -4 | 25.3 | 20.4 | -4.9 |
| NCEC Schools | 20 | 23 | 3 | 32.3 | 34.4 | 1.1 |
| Alphabus Schools | 12 | 18 | 6 | 25.3 | 30.7 | 5.4 |
| NIE Schools | 14 | 18 | 4 | 27.2 | 30.7 | 3.5 |
| Grade 6 | | | | | | |
| All Participants | 22 | 23 | 1 | 33.7 | 34.4 | 0.7 |
| Parochial Schools | 22 | 23 | 1 | 33.7 | 34.4 | 0.7 |
| Private Schools | 2 | 6 | 4 | 6.7 | 17.3 | 10.6 |

group. On the other hand parochial school students failed to advance in percentile standing except in grade 6. NCEC and Alphabus groups gained in all but one grade. Private school students advanced in grades 2 and 6 only.

These data complement the grade equivalent data presented in Table 8 by viewing the changes in terms of their relation to the norm group. The data demonstrates that while the elementary students improved in reading, the improvement was due mainly to the gains of the public school students and the special programs (NIE, NCEC, and Alphabus).

Another view of the impact is gained from examination of the NCE scores. NCE's are Normal Curve Equivalents, a "new" score with a mean of 50 and a standard deviation of 21.06. The scale was developed and disseminated by the U.S. Office of Education. The scale closely matches the percentile distribution, hence has the qualities of interpretation inherent in percentile scores. However, the scale is also an equal interval scale and can be used in arithmetic calculations, while percentiles cannot. The NCE scale permits percentile scores from any norm referenced test to be transformed to an NCE score. These scores can then be aggregated across the state or country to determine the overall impact of Title I. According to OE materials, "Whenever the evaluation shows an NCE gain greater than zero, it means that the Title I pupils profitted from participating in the project. In general the larger the NCE gain, the more effective the project."

The NCE gains correspond closely to the percentile changes discussed above. Examination of NCE gains shown in Table 9 reveals that the Title I Project has had a positive effect upon its participants in the public schools, NCEC, Alphabus and NIE programs. Positive NCE gains were found for these groups in all but two cases (NCEC at grade 3 and Alphabus at grade 4).

Standardized Mathematics Tests

The mathematics subtests of the California Achievement Tests were also administered in October and May to students receiving mathematics instruction. As in the case of the reading scores, t-tests for correlated data were used to determine whether significant gains were made in standard score (Achievement Development Scale Scores) between pre-test and post-test. (Analyses were performed by the test publisher.) Analyses of Computation, Concepts, and Total Math scores were performed for students in grades 2-5 in the public schools, for students in grades 2-6 in the parochial schools, and for both groups combined. Since only post-tests were administered in grade 1, means and standard deviations were computed for the three test scores.

The results of the statistical analyses are shown in Tables H-J in Appendix A. Statistically significant gains were found for all grade levels in all groups--public, parochial, and all participants combined.

Table 10 presents a summary of the Total Math scores associated with the mean scores used in the statistical analyses. The results are shown for each

Table 10

Summary of Mean Grade Equivalent Scores in Total Math
for Public, Parochial and Total Participants
at the Elementary Level

| Group | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Grade 1 | | |
| All Participants | - | 1.6 | - | - |
| Public Schools | - | 1.6 | - | - |
| Parochial Schools | - | 1.7 | - | - |
| | | Grade 2 | | |
| All Participants | 1.6 | 2.7 | 1.1 | 1.6 |
| Public Schools | 1.5 | 2.6 | 1.1 | 1.6 |
| Parochial Schools | 1.9 | 2.8 | 0.9 | 1.3 |
| | | Grade 3 | | |
| All Participants | 2.3 | 3.4 | 1.1 | 1.6 |
| Public Schools | 2.2 | 3.3 | 1.1 | 1.6 |
| Parochial Schools | 2.5 | 3.6 | 1.1 | 1.6 |
| | | Grade 4 | | |
| All Participants | 3.3 | 4.3 | 1.0 | 1.4 |
| Public Schools | 3.2 | 4.2 | 1.0 | 1.4 |
| Parochial Schools | 3.5 | 4.5 | 1.0 | 1.4 |
| | | Grade 5 | | |
| All Participants | 3.8 | 4.8 | 1.0 | 1.4 |
| Public Schools | 3.6 | 4.6 | 1.0 | 1.4 |
| Parochial Schools | 4.6 | 5.3 | 0.7 | 1.0 |
| | | Grade 6 | | |
| Parochial Schools | 5.2 | 6.1 | 0.9 | 1.3 |

grade in public schools, parochial schools and for all participants combined. These data are also graphically portrayed in Figures 8-13. (The interested reader who may wish to examine the grade equivalent scores for each subtest in each group will find these results in Appendix C.)

Large gains in grade equivalent score in mathematics were made for all participants at grade levels 2-6. The gains far exceeded those projected for the seven months of instruction between pre- and post-testing. In fact, monthly gain rates ranged from 1.0 to 1.6 months gain in grade equivalent score for each month of instruction. In general, parochial school students tended to have higher pre-test and post-test scores. However, the gains made by both groups were comparable.

In grade 1, public school students ended the year two months below grade level at the time of testing, while parochial school students were one month below grade level. On the whole, all participants in grade 1 were two months below grade level at post-test time.

In addition to grade equivalent scores, the students math scores were transformed into percentiles and NCE's, which are shown in Table 11. (See also the previous discussion of percentiles and NCE scores under Reading.) As Table 11 indicates, student achievement in math exceeded their previous growth rate. Mean percentile gains were large and ranged from 5 to 24 percentile

Table 11

Summary of Mean Percentile and NCE Scores in Total Math
Across Seven Elementary Groups

| Group | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|
| | Pre | Post | Gain | Pre | Post | Gain |
| **Grade 1** | | | | | | |
| All Participants | - | 44 | - | - | 46.8 | - |
| Public Schools | - | 44 | - | - | 46.8 | - |
| Parochial Schools | - | 48 | - | - | 48.9 | - |
| **Grade 2** | | | | | | |
| All Participants | 28 | 52 | 24 | 37.7 | 51.1 | 13.4 |
| Public Schools | 24 | 43 | 19 | 35.1 | 46.3 | 11.2 |
| Parochial Schools | 40 | 56 | 16 | 44.7 | 53.2 | 8.5 |
| **Grade 3** | | | | | | |
| All Participants | 19 | 38 | 19 | 31.5 | 43.6 | 12.1 |
| Public Schools | 16 | 35 | 19 | 29.1 | 41.9 | 12.8 |
| Parochial Schools | 24 | 47 | 23 | 35.1 | 48.4 | 12.3 |
| **Grade 4** | | | | | | |
| All Participants | 25 | 38 | 13 | 35.8 | 43.6 | 7.8 |
| Public Schools | 21 | 35 | 14 | 33.0 | 41.9 | 8.9 |
| Parochial Schools | 32 | 44 | 12 | 40.1 | 46.8 | 6.7 |

Table 11 (cont.)

| Group | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|
| | Pre | Post | Gain | Pre | Post | Gain |
| | | | Grade 5 | | | |
| All Participants | 18 | 27 | 9 | 30.7 | 37.1 | 6.4 |
| Public Schools | 15 | 22 | 7 | 28.2 | 33.7 | 5.5 |
| Parochial Schools | 36 | 41 | 5 | 42.5 | 45.2 | 2.7 |
| | | | Grade 6 | | | |
| Parochial Schools | 29 | 38 | 9 | 38.3 | 43.6 | 5.3 |

points. Public and parochial school students advanced in percentile standing at each grade level. NCE gains reflected the large gains in percentile rank and ranged from 2.7 to 13.4 NCE units, indicating the positive effects of instruction.

Performance Objectives

In addition to the standardized test scores, data on the achievement of specific performance objectives were obtained from teacher ratings. As noted in the Evaluation Design, samples of Student Performance Objective Summary Sheets were selected from the total group to be tabulated. Samples were drawn from each grade and each instructional level of reading and math objectives.

The performance objectives are primarily important for guiding the teacher in the instructional process and secondarily to evaluation of the program. Their importance to and use by the teachers has already been documented earlier in this report. The following discussion summarizes the tabulation of teacher ratings. Percentages of elementary students who have achieved each of the performance objectives as rated by teachers are presented under separate cover.

Reading. Students at the readiness level demonstrated moderate achievement of the reading objectives. Grade 1 teachers emphasized the objectives: identifying from three pictures those beginning with the same sound, repeating two nonsense words after hearing them orally, matching pairs of words that are alike and different, and identifying from a list of words those that are exactly alike and different. In these four cases the rate of achievement for the objectives

exceeded 90%. Among the objectives which received less concentration, and consequently reported a lower proportion of achievement, were those objectives concerned with visual memory and language facility, which averaged 49% achievement.

Students at the pre-primer level in grade 1 achieved their objectives generally at a moderate rate also. Grade 2 students at the pre-primer level accomplished objectives at a slightly higher rate, with every objective achieved by more than 60% of the students. Particular attention was given to a student's ability to classify given objects according to category by circling a word or picture that is associated by type with three or four other words or pictures, as all students achieved this objective. Objectives achieved by grade 3 students at the pre-primer level did not exceed 75%, and over half of the objectives for these students were recorded at 50% mastery or less.

At the Primer level, grade 1 students demonstrated greatest achievement on Vocabulary and Comprehension objectives. Oral reading was given the least emphasis with only 15% of the students having achieved the objective. Teachers of grade 2 students apparently gave considerable attention to objectives 1-19, since the second grade students overall showed a high rate of achievement for these objectives. The moderate achievement by grade 3 students across all objectives at the primer level indicates the even distribution of attention placed on these objectives by grade 3 teachers.

In instructional level I, the vast majority of students were in grades 2 and 3. Achievement levels were generally high in both grades, especially for decoding objectives. Oral and written work concerning the student's outside reading and experiences received the least attention at this level.

In instructional level II, the highest rate of achievement of objectives was reported for students in grades 3, 4, and 5. Grade 2 students demonstrated a consistently moderate level of achievement across most of the level II reading objectives.

With the exception of grade 3 students, students at instructional level III showed a high rate of achievement of the performance objectives. The outcomes of grade 3 students were to be expected since the objectives at this level are the more difficult for these students. In approximately half of the cases, grade 4 students achieved objectives at a rate of 80% or higher. In grades 5 and 6 students achieved performance objectives at a rate of 80% or higher in at least 80% of the cases. Teachers apparently placed the least emphasis upon the last two objectives as the rate of achievement is conspicuously lower than those of other performance objectives.

Achievement of objectives for students in grade 5 and 6 at instructional level IV was generally moderate to low. A higher level of difficulty may possibly account for the lower percent of achievement for this level, rather than a lack of emphasis placed on the performance objectives by the teachers. Strong

achievement for students in grades 5 and 6 were reported for objectives concerning affixes, pronouns, literal comprehension and oral and written response to questions concerning personal experience related to selection read.

Mathematics. At the readiness level, mathematics objectives were attained in 98% of the cases. In grade 1, only 37% of the students were found to have achieved the objective dealing with the expression of linear measurement through different units of length (63). This objective apparently received a low level of attention, since for all other objectives, the first grade students demonstrated a high degree of achievement.

In level I, 34% of the objectives were accomplished by 50% or more of the students in grade 1. Fractional concepts and currency measurement received the least attention. With the exception of two instances, grade 2, 3, and 5 recorded moderate to high achievement of objectives. Only 27% of the students in grade 3 achieved the first objectives (dealing with symbols and vocabulary related to level objectives), and only 33% of the students in grade 5 accomplished the objective recognizing symmetrical shapes. While level I students in grades 2, 3, and 5 achieved rather highly, achievement for grade 4 students remained moderate, not exceeding 80% on any of the objectives and dropping below 40% twice.

Achievement of objectives in all level II grades was generally low to moderate, with the exception of high achievement in areas such as numeration and subtraction.

Grade 1 teachers apparently focused on the use of symbols and vocabulary related to level objectives and consequently, two-thirds of the pupils demonstrated mastery of these objectives, whereas grades 2 to 5 recorded substantially lower levels of achievement in these areas.

Level III students in grades 3, 4, and 5 mastered the objectives at a moderate rate. Students in grade 5 showed the highest levels of achievement. All grades achieved well on objectives concerning counting by fives, tens, and hundreds; numerical reading and writing; addition computation; multiplication concepts; currency and calendar skills. Little focus was given to dry measurement, geometric shapes, and multiplication problem clue identification as indicated by a relatively low percentage of achievement for these objectives.

Level IV students in grades 4 and 5 showed a moderate level of achievement for these objectives. In grade 4, attention was apparently focused upon computation skills, where greater than 90% of the students achieved the skills for three out of four of the objectives. For students in grade 5, emphasis was placed upon regrouping, where 90% of the students achieved the objectives for addition and multiplication. Among the objectives which were recorded as having a low level of achievement were those objectives concerned with geometric shapes, word problems and temperature.

Eighty-two percent of the students in level V were successful in finding the sum with regrouping 6 sets of 4 digit numbers. However, three-quarters of the

objectives attained no more than a 50% level of achievement. Objectives which received the least amount of emphasis were rounding off numbers to thousands and ten thousands, finding a fractional part of a whole number, time, and graphs.

## Recommendations

Based upon the findings of the evaluation, the following recommendations are offered:

1. Conduct orientation in small groups by district, or districts, depending upon the number of teachers and aides involved. Continue to separate experienced and inexperienced Title I teachers, perhaps limiting the orientation for experienced teachers to no more than one full day, while continuing with several days of training for the new teachers.

2. Recommend to principals and faculty senates that a portion of each released time program be devoted to communication between Title I and the classroom teachers.

3. Continue the small group in-service process as established this year.

4. Continue to focus in-service training on individualized planning techniques.

5. Consider the development of in-service training programs for classroom teachers in the Title I schools.

6. Consider the use of consultants from local colleges and universities and other school systems to conduct some of the in-service training.

7. Utilize video-tape presentations for demonstration lessons, the use of the Sucher-Allred Test, and diagnostic testing during orientation and in-service training.

8. Continue the use of a different reading series from that used in the regular classrooms.

9. Pilot test the Ginn Communication Skills Program with another sample of teachers.

10. Consult with the State Department of Education about ordering an advance supply of materials. A program of such magnitude and importance deserves some special consideration in this regard.

11. Establish a Materials Resource Center for use by Title I teachers, with a small budget for the acquisition of a variety of materials.

12. Prepare specific plans for the Community Relations Department to overcome the obstacles to full implementation of the local and district and citywide PAC's.

13. Increase parental involvement and communication with teachers apart from the formal establishment of PAC's.

14. Continue the Alphabus program in two Title I schools with limited space.

15. Meet with Reading Lab teachers at the beginning of the year to discuss communication with classroom teachers, use of the Lab for first grade students, morale, and performance objectives.

16. Test all public and parochial school students, using tests supplied by the program, who have been identified as eligible by Part II of the revised checklist and who do not have test scores. Teachers should score the tests immediately to determine whether the students meet the cutoff score criterion.

17. Identify the needs of aides and provide a separate in-service training program for them. (To be accomplished by the Assistant Director of Aides.)

18. Investigate and propose to the State Department the possibility of allowing Title I teachers to accept reasonable extra-classroom duties comparable to classroom teachers. This recommendation is made to increase the relationships between the classroom and Title I teachers and so that the Title I teacher is seen as a integral member of the school faculty.

19. Recommend to teachers to set aside a specific half hour of each day (based upon their school's schedule) for planning and paperwork.

# MIDDLE SCHOOL READING PROGRAM

## Description of Program

Table M-1 presents an overview of the Middle School Reading Program, which was in its second year of full operation. Table M-2 lists the schools in which the program operated and the number of staff providing reading instruction in each school. The Middle School Reading Program was implemented in 26 schools this year--six more than last year. There were 19 public schools and seven parochial schools in the project. Approximately 2,000 students were served in the program by 50 teachers and 50 instructional aides.

Table M-1

Overview of Middle School Reading Program*

| | Schools | Teachers | Aides |
|---|---|---|---|
| Public | 19 | 43 | 43 |
| Parochial | 7 | 7 | 7 |
| Totals | 26 | 50 | 50 |

* Data as of February, 1977 provided by Title I office.

Table M-2

Schools Served by and Staff of Middle School Reading Program*

| School | Number of Reading Teachers | Number of Aides |
|---|---|---|
| Public | | |
| Cleveland | 4 | 4 |
| Curley | 2 | 2 |
| Dearborn | 2 | 2 |
| Edwards | 2 | 2 |
| Gavin | 4 | 4 |
| Holmes | 2 | 2 |
| Jackson-Mann | 1 | 1 |
| King, Martin Luther | 2 | 2 |
| Lewis | 2[a] | 2 |
| Mackey | 2 | 2 |
| Mario Umana Harbor School | 1 | 1 |
| McCormack | 4[b] | 4 |
| Mead | 1 | 1 |
| Michelangelo | 1 | 1 |
| Roosevelt | 2 | 2 |
| Taft | 4 | 4 |
| Timilty | 3[b] | 3 |
| Wheatley | 2 | 2 |
| Wilson | 2 | 2 |
| Parochial | | |
| Cathedral | 1 | 1 |
| Gate of Heaven | 1 | 1 |
| Our Lady of Perpetual Help | 1 | 1 |
| St. Brigid | 1 | 1 |
| St. Catherine | 1 | 1 |
| St. Francis DeSales (Rox.) | 1 | 1 |
| St. John (Rox.) | 1 | 1 |

* Data as of February, 1977 provided by Title I office.

[a] Both Reading Lab teachers.

[b] Includes two Reading Lab teachers.

The principal instructional mode was an individualized system in which a teacher and an aide served a total of 40 students in five 45 minute periods, five days per week. In addition, the New Century Reading Lab operated in three schools serving approximately 140 students per day in groups of 28 students.

As in the Elementary Enrichment Program, the focus was upon meeting the needs of the individual student. The New Century Lab is designed to individualize the instructional process completely with each child working at his/her own level and pace. To accomplish individualization in the non-Lab mode, a complete instructional system has been developed. The system includes informal and standardized diagnostic tests to identify strengths and weaknesses, and a systematic lesson plan format - the Individual Prescriptive Work Plan - which, as its name implies, encourages individualization of planning and instruction.

Overall program administration and supervision was the responsibility of a central administrative component. An Associate Director-Secondary and an Assistant Director-Secondary served the administrative requirements of the Middle School Program and also were concerned with instructional supervision and staff training. These administrators were assisted by the Assistant-Directors-Staff Development in instructional supervision and staff training.

Also involved with the Middle School Reading Program (and with all Programs in the Title I Project) were the Community Relations Department and Parent

Advisory Council. Selected aspects of the operation of these latter two groups pertaining to the Middle School Program are also discussed in this report, and previously in more detail in the report on the Elementary Enrichment Program.

## Evaluation of Program Inputs and Processes

For the purpose of this section of the report, inputs are defined as those factors which the school department assigns to the program (e.g., facilities, materials, aides, etc.); processes are the functional, operational aspects (e.g., supervision, instruction, scheduling, etc.). The results reported in this part are based upon interviews, questionnaires, records, and on-site observations.

### Administration and Supervision

The Middle School Reading Program was administered by the Associate Director-Secondary and the Assistant Director-Secondary as noted previously. Sharing supervisory responsibilities with these administrators were the six Assistant Directors-Staff Development. (See also discussion of the roles of the Assistant Directors-Staff Development under Elementary Enrichment Program.) While one Assistant Director-Staff Development served as liaison to the Middle School Program, the Staff Development team shared in the supervision of teachers in the Middle Schools.

The organization of the Middle School Title I program was perceived as satisfactory by over 95% of the Title I teachers. All but one of the teachers reported that the program guidelines had been clearly explained to them. The large majority reported satisfaction with the responsiveness of the Title I administration, and with the cooperation they received from principals, as well.

Principals were also satisfied with the program's administration. Ninety-two percent of the principals indicated that there was sufficient communication with the Title I administration, and all but one of the principals reported that they were kept adequately informed of the program's operation. Further, all but one principal were satisfied with the cooperation of the Title I administration.

All of the building principals reported that they were satisfied with the supervision provided to the Title I teachers in their school. Similarly, 92% of the teachers were satisfied with the supervision they had received from their Title I supervisor. In addition, 89% of the teachers noted that their supervisor was responsive to their needs. Although 95% of the teachers reported that the supervision they had received during the year had been adequate, approximately 41% still felt that they could have used additional specific help in establishing programs for their students. Only one-third of the teachers reported that they did not need more assistance from their supervisors to establish programs for their students. These results are similar to those reported last year when so many of the teachers were new to Title I. Since the program expanded in the Middle Schools this year (from 34 teachers to 50 teachers), there were again teachers new to Title I requiring early assistance. While these teachers were provided with a full day of training during the orientation session after the general orientation for all teachers, the requirements for initiating the Title I instructional system are of sufficient difficulty to account for their responses.

Communication

Communication problems between Title I teachers and classroom teachers are chronic to Title I programs, in general. Some problems in this area persist in the Middle School program. While 43% of the Title I teachers felt that they had had adequate discussion of student progress with classroom teachers, 41% reported their dissatisfaction with the amount of discussion of student progress with classroom teachers. In addition, less than half of the Title I teachers felt that the classroom teachers had cooperated fully in diagnosing the needs of the students. Seventy-percent of the Title I teachers believed that there is a need for better communication with classroom teachers.

In contrast, all of the principals were pleased with the cooperation and communication between themselves and the Title I teachers. Similarly, 72% of the classroom teachers and the majority of principals reported that the cooperation and communication between Title I teachers and classroom teachers was sufficient.

Communication between specialists and classroom teachers usually presents difficulties in a school because of their differing roles and normal scheduling parameters. As noted previously, communication problems between Title I and classroom teachers are inherent in most Title I "pull-out" programs. The lack of unscheduled time for these groups to meet generally accounts for the problems. However, at the Middle School level time is not a factor since

two planning and administrative periods are available to all teachers. This is not true at the Elementary level. Therefore, serious efforts are required by each school's leadership to utilize some of the available time to foster communication between the Title I teachers and classroom teachers.

Apparently, sufficient communication and cooperation between Title I and classroom teachers was present during scheduling, for 76% of the Title I teachers reported that classroom teachers cooperated with the scheduling of students for Title I classes. Despite this cooperation, 42% of the Title I teachers reported that scheduling problems (not specified) seriously detracted from the operation of Title I classes. The majority of the principals and classroom teachers did not perceive the seriousness of scheduling problems since they reported that the students participation in the Title I classes did not substantially interfere with the regular classroom processes. However, it should be noted that approximately 46% of the principals and 26% of the classroom teachers did feel that the students' participation in the Title I program did interfere substantially with the regular classroom activities. Scheduling "pull-out" classes at the Middle school level is difficult because of the departmentalized nature of the curriculum and the requirements for graduation. The program administrators have met at least two times with the principals concerning this issue and requesting their assistance. The granting of "points" for Title I participation may solve the scheduling problem in the future.

Concerning the communication among Title I teachers, only one-third of the Title I teachers felt that adequate opportunities were available to them for exchange of ideas, materials, and methods with other Title I teachers in the city. In addition, 65% of the teachers felt that there is a need for better communication among the Title I teachers in the target area schools. These results, similar to last year's, are surprising in light of the successful workshops held for teachers during the Spring. They may be attributable to the newness of the program (two years old, and in several new schools this year) and the accompanying uncertainties felt by teachers in a new situation, often where the teacher was the only Title I teacher in the school.

Facilities

Only half of the Title I teachers were satisfied with their present instructional facilities, while 47% reported that their classroom teaching facilities were not adequate for effective instruction. A summary of teachers' responses to questions regarding their teaching facilities and environment is shown in Table M-8. In general, teachers' descriptions of their work environment were fair to good. A number of teachers, however, expressed dissatisfaction with almost all of the environmental factors, particularly accommodations for more than one group, lighting, temperature, and storage space. The space problems are well known to the administration who have attempted solutions within the parameters of crowded school conditions, and the space priorities assigned to programs which function under the auspices of CH 766 and the Transitional Bilingual Act.

Table M-3

Descriptions of the Environment of the Title I Program as Proviced by Middle School Title I Teachers

| | | | |
|---|---|---|---|
| Accommodations: | Classroom-69% | Hallway-0% | Other-31% |
| Room Size: | Excellent-38% | Adequate-45% | Inadequate-17% |
| Seating: | Fixed Seats-4% | Moveable-92% | Both-4% |
| Accommodations for more than one group: | Good-53% | Fair-21% | Poor-26% |
| Acoustics: | Good-59% | Fair-27% | Poor-14% |
| Lighting: | Good-60% | Fair-17% | Poor-23% |
| Distractions: | Minimal-45% | Acceptable-38% | Excessive-17% |
| Temperature: | Too Hot-18% | Comfort Range-61% | Too Cold-21% |
| Humidity: | Dry-26% | Moderate-74% | Damp-0% |
| Material Storage Space: | Excellent-38% | Adequate-38% | Inadequate-24% |

In-Service Training

In addition to orientation and full day of training for teachers new to the Middle School Reading Program, several workshops were held for middle school Title I teachers and aides during the year. In October a workshop was held for teachers concerning the PLUS 4 Reading Booster which serves as the basic reading system for the program. On October 18, a workshop was held for the teachers

which focused on individualizing instruction including diagnosis, recording, planning, and remedial techniques with opportunity for teacher interaction and sharing of successful teaching experiences. On March 7 and 11 workshops for teachers and aides were conducted by the Assistant Directors-Staff Development. Five concurrent sessions were scheduled in the morning for small groups of teachers and aides: Expanding Vocabulary, Refining Comprehension, Exploring the Content Areas, Applying Study Skills, and Perusing Potential Materials. In the afternoon, the teachers and aides participated in "make and take" activities during which they reviewed and selected from a wide variety of materials collected and prepared by the Assistant Directors-Staff Development. In June, another workshop was held for teachers to review the PLUS 4 and PLUS 10 systems used by the teachers, past evaluation results, materials, objectives, and the pupil profile.

Over 94% of the Title I teachers reported satisfaction with the in-service meetings, noting that they had found them useful to their work. The proportion of teachers satisfied with the in-service training is nearly double that of last year. There was no consensus on additional topics suggested by teachers for further in-service training. The suggestions made by teachers included more help with students' individual problems, diagnosis and remedial reading, dealing with behavior problems, more exchange of "teacher-made" materials, motivation techniques, the use of audio visual techniques in remedial reading instruction, and the inclusion of math and science concepts in remedial reading subjects.

Instruction

Similar to the Elementary Enrichment Program, a complete instructional system had been designed for reading instruction. The system is based on a diagnostic-planning-instruction cycle encouraging the sequential development of skills, independent work, reinforcement, and the appropriate use of teacher and aide. All of the teachers reported that they had identified individual learning needs for each child, and 95% of the teachers reported that an individual instructional sequence had been planned for every student. While one-fourth of the teachers indicated that they conduct most of their lessons for the class group as a whole, 92% of the teachers reported that their lessons provided for individualized instruction, whether in a small group or in a one-to-one situation. All but a few of the teachers believed that the student-teacher ratio was appropriate for the type of instruction required by their pupils.

Almost three-fourths of the Title I teachers reported regularly using the Individual Prescriptive Work Plan, and 58% felt that it was an appropriate tool for planning individualized instruction. As noted in the Elementary Enrichment Report, the use of the Individual Prescriptive Work Plan, as a form, was not required of teachers this year. However, the elements of the Plan were required in their planning, and criteria for planning were established based on these elements by the Assistant Directors-Staff Development. Because the Plan per se was not required and recalling the negative reactions of the teachers to the Plan last year, it is surprising to note the acceptance and use of the

Individual Prescriptive Work Plan. While one-third of the teachers did not consider the Plan an appropriate tool for planning individualized instruction, as noted in the Elementary report, it is obvious that the teachers' dissatisfaction is not with the Plan itself, rather it is with the individual planning process. Planning individually for approximately 40 children is undoubtedly difficult, nevertheless it is a necessary condition to successful remediation of the students' deficits. There is no easy way in which to accomplish this type of planning, and the supervisors must continue, as they have in the past, to reinforce with teachers the importance of planning for individualized instruction, its difficulty notwithstanding.

Observation of classes revealed that, on the average, six students were in attendance. Two-thirds of the time students were in two or more groups, and in about two out of three classes, an average of three students were working independently. As shown in Table M-4, students, on the whole, were engaged in using worksheets or workbooks 55% of the time, answering questions 17% of the time, and oral reading 14% of the time. Seventy-five percent of the time, teachers were observed instructing or supervising student work; 15% of the observations recorded teachers preparing materials and 5% testing and correcting worksheets. Aides, on the other hand, were observed assisting with instruction or supervising student work 37% of the time, and performing additional support activities 63% of the time. Aides were not present in 20% of the classes visited.

Table M-4

Record of Activities Observed in Title I Middle School Reading Classes

| Student Activity | Percent of Observations: Teacher Group | Aide Group | Students Working Independently | Total |
|---|---|---|---|---|
| 1. Worksheets/Workbooks | 35 | 53 | 69 | 55 |
| 2. Oral Reading | 29 | 0 | 0 | 14 |
| 3. Silent Reading | 6 | 0 | 0 | 3 |
| 4. Games | 0 | 0 | 0 | 0 |
| 5. A/V Equipment | 0 | 17 | 15 | 8 |
| 6. Student Answering Questions | 29 | 0 | 8 | 17 |
| 7. Discussion | 0 | 0 | 0 | 0 |
| 8. Board Work | 0 | 0 | 0 | 0 |
| 9. Drawing, Coloring | 0 | 0 | 8 | 3 |

| Adult Activity | Teacher | Aide |
|---|---|---|
| 10. Explaining, Tutoring, Demonstrating, Questioning | 60 | 6 |
| 11. Supervising Student Work | 15 | 31 |
| 12. Reading to Children | 0 | 0 |
| 13. Testing | 5 | 6 |
| 14. Preparing Materials | 15 | 6 |
| 15. Escorting Pupils | 0 | 0 |
| 16. Distributing Materials | 0 | 0 |

Table M-4 (cont.)

| Adult Activity | Percent of Observations | |
|---|---|---|
| | Teacher | Aide |
| 17. Preparing Displays | 0 | 13 |
| 18. Correcting Worksheets | 5 | 13 |
| 19. Completing Records, Forms, Attendance | 0 | 0 |
| 20. Planning Instruction | 0 | 0 |
| 21. Housekeeping | 0 | 25 |
| 22. Operating Machines | 0 | 0 |
| 23. Other | 0 | 0 |

One of the charges given to teachers during their training workshops in the Spring was to establish contact with social studies teachers in their schools to encourage the use of this content area to develop vocabulary, comprehension, and critical reading skills.

Slightly more than half of the teachers noted that they had been able to follow up in their schools on the charge to introduce reading in the content area in their lessons. Teachers who attempted to integrate the social studies content area with remedial reading reported that the students and classroom teachers were receptive to this approach. Topics covered included map reading, vocabulary, locating information, dictionary skills, following directions, charts and graphs, sequencing, and cause and effect in history. An interesting problem was cited by several teachers who reported that because their students had several social studies teachers that it was not possible or at least very difficult for them to integrate all the different social studies activities with their reading classes.

Materials

While the proportion of teachers reported having sufficient instructional materials to conduct their classes effectively rose to two-thirds this year, one-third still felt that the amount of instructional materials available to them was insufficient. Seventy-six percent of the teachers were satisfied with the quality of materials that were available to them. Eighty-seven percent were satisfied with the amount of general school supplies that were provided.

Satisfaction with materials available has risen significantly this year. Most teachers had available as their basic instructional materials complete sets of PLUS 4 Reading Booster, Readers Digest Kits and the Point 31 Program. These were all cited as effective by the teachers.

An examination of the PLUS 4 system conducted by the program's administrators, revealed a general satisfaction on the part of teachers and students with most components of the system. Teachers comments included

> I thought it was an effective program for reinforcing reading skills. For the most part it was enjoyed by the students.
>
> On the whole +4 Reading Booster fits the needs of most (of) my students . . .
>
> Best material I've used for children of low reading ability.

Criticism of PLUS 4 offered by the teachers included: everyday use made it boring; tapes are too slow; some vocabulary is difficult; and narration is too "stuffy."

Some teachers were also pilot testing the PLUS 10 Vocabulary Booster. Reactions to the program by four of the five teachers was mixed ranging from very enthusiastic to indifference. The childish tone of the tapes and the use of fables drew the most ctiticism. Two teachers noted that it worked best in groups which was not congruent with the Title I instructional philosophy.

As noted earlier in the report, many teachers reported not having ample opportunity for exchange of materials, ideas, and methods with other Title I

teachers. While 58% of the teachers noted that they had been able to share some of the good materials prepared by other Title I teachers, approximately one-third of the teachers reported that they had not.

Many teachers (76%) reported that they had taken advantage of the opportunity to order materials (up to $50) which they desired for their classes. Another 16% of the teachers reported that they had not taken advantage of this excellent opportunity to satisfy some of the material needs specific to their own situation. Concerning other commercially prepared materials, nearly half of the teachers requested that more be available for their use. There was no consensus of opinion among the teachers concerning these requests, however. Specific materials that were suggested by the teachers included: Globe and Herald Newspapers, workbooks on comprehension skills, instructional games, and phonics materials.

A committee of administrators, supervisors, and teachers was established to review new materials as recommended in last year's evaluation.

Morale

The majority of Title I teachers reported that morale was high and that they were happy working in the Title I program. Only 10% of the teachers reported that they were not happy working in the Title I program and did not consider morale high. Ninety-five percent of the teachers considered themselves qualified

to teach remedial reading in the Title I Middle School Program, and felt that, as a Title I member, they were accomplishing something worthwhile.

New Century Reading Labs

The Reading Learning Centers are a product of the New Century Corporation. In brief, the Centers provide a highly individualized, audio-visual, automated approach to teaching reading. Each Center is fully equipped with curriculum materials and necessary A-V equipment by the corporation. The New Century Reading Labs--the common name used for these Centers during the program--were in the Lewis, McCormack, and Timilty Middle Schools. Two teachers and two aides staffed the Labs at each school.

Five of the Lab teachers in the middle schools were very satisfied with many of the aspects of the Labs and their operation. They indicated their satisfaction with the administration, organization and supervision of the program, as well as with the student-teacher ratio, scheduling, in-service meetings, teacher aides, the communication they have with other Lab teachers in the city, teaching facilities, and the maintenance and quality of the Lab materials and equipment.

In addition they were very pleased with the progress the students had made in their weak areas, and felt that the instruction had met the needs of the majority of the students being served. They reported that the Lab was at least as effective as instruction provided by a teacher and an aide in a remedial reading class with a low pupil-teacher ratio. However, only three of the teachers felt that the Lab

was as effective for the more seriously deficient student and only two of the teachers felt that the Lab approach was more effective in remediating specific skill deficiencies than the traditional Title I remedial instruction. Nevertheless, only two of the Lab teachers noted that one or two of their students could benefit more by remedial instruction of the type provided by other Title I classes. Finally, only one teacher felt that students tire of the Lab's approach as the year progressed and that this had a serious effect on their performance.

Areas of concern to the Lab teachers were the same as those reported last year: communication, placement tests, parental involvement, and paperwork, with the addition of morale. While three of the Lab teachers noted that they had good communication with classroom teachers, only two felt that there was adequate discussion of student progress. For example, four out of five (one was not sure) of the Lab teachers reported that classroom teachers had not used the comment section of the bimonthly report to respond to the report or comment on student needs. All of the Lab teachers agreed that there is a need for better communication with classroom teachers. Concerning communication among themselves, three out of five of the Lab teachers felt that the opportunities available for exchange of ideas, materials, and methods with other Lab teachers in the city were inadequate.

Two of the five teachers felt that the placement tests were not adequate to identify the child's placement level in the system, and that the system of placement

and instruction did not provide them with enough information about the child's specific remedial needs. Also, only three of the Lab teachers were satisfied that the standardized achievement test used in the program measured the program's outcomes. All of the Lab teachers indicated that they would like to see an assessment of student attitudes toward school and self-concept as part of the evaluation of the Title I program.

While four of the Lab teachers felt that the parents of children had taken an interest in the program, and that communication with parents was sufficient, one teacher disagreed. Only two of the Lab teachers were satisfied with the reporting of students' progress in the Title I program to their parents.

In contrast to last year's findings, the Lab teachers, as a group, were undecided regarding their morale. While only one of the Lab teachers reported being unhappy working in the Title I program, two teachers noted that they were dissatisfied in their roles as Lab teachers, and felt that it was not professionally rewarding to them. Only three of the six teachers felt that, as a Title I Lab teacher, they were accomplishing something worthwhile.

Though all of the Lab teachers reported that they had sufficient time to complete the paperwork required by Title I, two of the teachers felt that there was generally too much paperwork in the program. The factor that teachers cited most often as too time consuming was the performance objective checklist for the students.

All of the Lab teachers agreed that the students had benefitted substantially from their participation in the program, and four out of five noted that the children, for the most part, enjoyed coming to the Lab.

In general, the Lab teacher aides were satisfied with all of the aspects of the Title I Lab program. However, three of the aides felt that the teachers should have been provided with more accurate information regarding the nature of their duties and responsibilities at the beginning of the program, and one aide noted that she would have preferred more direction from her teacher. While all of the aides felt that their training was adequate to handle the responsibilities of the program, four of the six aides reported that they would benefit from additional training directed toward improving their role in the Title I program. However, none of the aides offered specific topics or any particular training they would like to receive.

Objectives

All of the principals, 97% of the Title I teachers, and 86% of the classroom teachers agreed that they fully understood the objectives of the Title I program. Importantly, 89% of the Title I teachers, 76% of the classroom teachers, and all but one of the building administrators believed that the objectives of the Title I Middle School program met the needs of the students.

The comprehensive set of objectives was revised and produced by the administrators and a committee of middle school reading teachers and distributed to all Title I teachers. These objectives were based upon the objectives prepared by the school system's Reading Department for the implementation of its reading program throughout the system, and modified by the experience of the Title I teachers and administrators. The list of objectives appears comprehensive and includes terminal and enabling objectives in the following areas: phonic analysis, structural analysis, comprehension skills, reference and study skills, and supplementary objectives in critical reading. Over 86% of the Title I teachers reported using the specific performance objectives for each of the children with whom they worked, and 82% found these objectives helpful as a guide to teaching and evaluating their students.

Orientation

For the most part, Title I teachers were pleased with the orientation process. Only 17% of the teachers responding reported dissatisfaction with the orientation. Teachers' comments most frequently related to the insufficient amount of time available for proper orientation. Five teachers, probably those new to Title I, suggested that more time be allotted for this aspect of the program.

Parental Communication

Parental interest and involvement in the Middle School Reading Program remained low. Over half of the teachers reported that they had not had sufficient

communication with the parents of their students, and 59% reported that the parents of their students had not taken an interest in the Title I Program. While 47% of the teachers were satisfied with the reporting of childrens' progress in the program to parents (a progress report was sent home three times during the year), an almost equal proportion of teachers (42%) reported that they were dissatisfied with this type of communication. On the average, teachers reported approximately nine of their students' parents had met with them this year.

In contrast to the report of teachers, 94% of the parents reported that they were satisfied with the amount of information they had received regarding their child's progress in Title I classes.

By the end of the year, PAC's were formed in about half of the middle schools; five others have "representatives." The principals, as a whole, were undecided whether the Community Liaison Aides had been helpful in establishing PAC's and community support for the Title I Program. While four of the administrators felt that these aides had been helpful in increasing parental involvement in the Title I program, five others disagreed and four were not sure. In addition, only half of the parents who had responded reported that they were aware of the PAC in their children's schools, and that they had been contacted by PAC this year. Only 38% of the parents felt that they knew what the role of PAC was.

The problems with parental involvement and PAC development in the Middle Schools were also noted in interviews with PAC members and the Associate

Director of the Middle School Program. The attempt to organize and schedule PAC meetings to include a number of schools in order to increase attendance has met with only limited success. The involvement in PAC's at the middle school level remains well below that at the elementary level. Some reasons offered to explain this status include: parents are less interested in school as their children get older; parents are already involved in many parent groups; parents are reluctant to leave their neighborhoods to attend meetings; and the fact that the Middle School program is relatively new when compared to the Elementary Enrichment program.

The role of the PAC and the Community Relations Department has been discussed in the Elementary Enrichment report. For further discussions of these topics see pages 39 to 47 of the Elementary report.

Program Initiation and Attendance

While some of the schools experienced delays which were considered serious, implementation of the program proceeded smoothly this year. Typically, students began instruction in the last week of September or the first week of October (obtained for a sample of 593 students selected at ramdom from student attendance records). As shown in Figure M-1, 38% of the students began by the end of September, and 86% of the students were enrolled before the middle of October. In contrast to last year when 42% of the students began after November 1, only 3% of the students were enrolled after November 1 this year. The average total

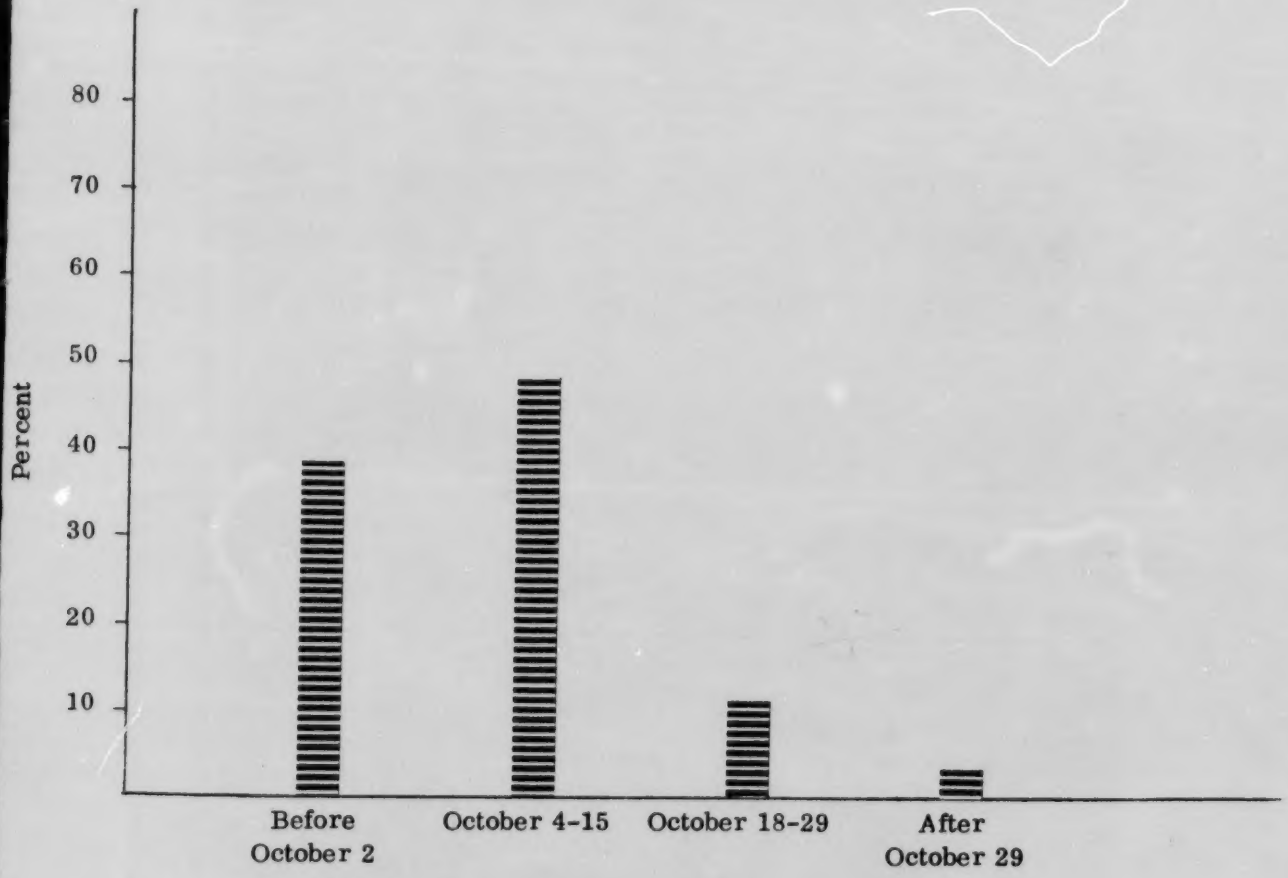


Figure M-1: Starting dates for Middle School Reading Students

days of attendance in Title I classes through the end of May for middle school students was 101 days. The average attendance rate was low, only 69%, but this figure was five percentage points higher than last year.

Student Evaluation

The majority of teachers reported that the process for identifying Title I children for their classes (a multifactor checklist) selected those students who were most in need of help. Eighty-five percent of the principals and the majority of classroom teachers concurred with the opinion that, for the most part, the Title I program was serving the students who needed help most.

Almost three-fourths of the Title I teachers were satisfied that the diagnostic tests and devices available for their use were adequate to identify student strengths and weaknesses. However, approximately one-third of the teachers did not believe that the standardized achievement test used to evaluate the program adequately measured the program's outcomes, and 41% were not sure. Only 27% of the teachers were satisfied that the standardized achievement test was an adequate measure of the outcomes of the program. Over 70% of the teachers indicated that they would also like to have some type of assessment of a student's self-concept and attitudes toward school and learning as part of the program's evaluation.

Teacher Aides

The overwhelming majority of teachers reported good rapport with their teacher aide, and noted that the presence of the aide in the classroom made it easier for individualization of instruction. Seventy-eight percent of the teachers reported using the aide in an instructional capacity more than clerical, while approximately one-fifth of the teachers disagreed (c.f. Table M-4). Importantly, over 95% of the teachers considered the aides to be an asset to the Middle School Program.

In the same vein, 94% of the aides were satisfied with the relationship they had with the Title I teacher in their classroom. In addition, all but three of the aides reported good coordination of efforts and planning with their Title I teacher, and felt that the teacher to whom they were assigned used their services most effectively. Over 81% of the aides reported that there were not times during the day when they had nothing to do. While all of the aides reported a clear understanding of the role of the teacher aide in the Title I program, and despite the fact that most aides were experienced, 43% of the aides reported that they would have liked more accurate information regarding their duties and responsibilities at the beginning of the program. In addition, over half believed that teachers should have been provided with more accurate information regarding the role of the teacher aide at the beginning of the program.

The morale of the aides was high, according to 81% of the aides. All of the aides enjoyed working in the Title I program. The large majority of aides

reported working well with students and noted that the children were glad that they were there to help them.

The aides, agreeing with the teachers, reported spending most of their time in activities involving direct contact with students, and 88% indicated that most of their time was spent teaching. However, a substantial minority (41%) of aides felt that they spent a great deal of time working on preparing materials and correcting tests and papers (c.f. Table M-4). All but one of the aides believed that their presence in the classroom significantly increased the amount of individualized instruction and small group activity available to the children.

All of the aides expressed confidence in their abilities to handle the responsibilities of their job and reported that their training was adequate to permit them to handle their duties concerning classroom instruction. While the majority of aides reported that they found the in-service meetings useful, over three-fourths of the aides indicated that they could benefit from additional training directed toward improving their role in the Title I Middle School project. Suggestions for further training made by the teacher aides were: additional training in teaching skills, use of materials, college courses in Psychology and Reading, audio-visual workshops and techniques to manage disciplinary problems.

Time

Time for planning and paperwork is usually an issue in federally funded programs. While this aspect of the Title I program was a source of concern

to elementary teachers in the program, it did not seem to be as serious an issue in the Middle School Program, probably due to the availability of two planning and administrative periods. Over two-thirds of the Middle School Title I teachers noted that there was enough time, in general, available to them to complete their instructional planning, while only approximately one-fifth of the teachers disagreed. Similarly 71% of the teachers indicated that enough time was provided to them to complete paperwork, other than planning, as required by Title I. The amount of time that teachers reported available to them for planning and paperwork varied from no time (3%) to 90 minutes per day (42%). Eighty-eight percent of the teachers, however, reported that they had at least 45 minutes during the day for completing their instructional planning and other paperwork.

Only a few of the teachers reported regularly assisting in the non-teaching functions of the school (recess duty, bus supervision, playground duty, etc.). This was confirmed by all of the principals. However, over 92% of the principals still believed that the Title I teachers should be obliged to perform such non-teaching functions.

As might be expected, over half of the teachers (a decrease from last year's findings) indicated that there was too much paperwork, in general, in the Title I program. The most frequent factors that teachers cited as the source of their complaint were the lesson plans and the duplication of information on various forms.

Value of the Program

The program was valued by the majority of the Title I staff, classroom teachers, principals, and parents. As one Title I teacher noted:

> The best part of this program (for student and teacher) is the opportunity to get to know and to work with <u>each</u> child one-to-one.

The large majority of principals and classroom teachers were satisfied with the work of the Title I teachers and considered them assets to their school. Their comments included:

> It is a great help to our slow readers. (classroom teacher)

> The Title I programs are the best servers to the school and the students that we have. This program is the best asset to any school. (classroom teacher)

It is not surprising, therefore, that the overwhelming majority of principals and classroom teachers recommended that the Title I program continue in their schools next year.

Parents also responded enthusiastically about the value of the program. The comments offered by these parents typifies their high regard for the program:

> I think Title I is a very worthwhile and needed program.

> Title I Reading is good for children to proceed at their own pace and not have to compete with other children.

## Evaluation of Program Outcomes

### Standardized Reading Tests

As reported in the Evaluation Design, the Metropolitan Achievement Tests, Word Knowledge and Reading subtests, were administered in October and May. Seven months of instructional time elapsed between pre-test and post-test. Standard scores in Word Knowledge, Reading, and Total Reading were analyzed by means of a t-test for correlated data to determine whether statistically significant gains were made between fall and spring testing. Analyses were performed for public middle schools, parochial middle schools, NCEC Program schools, and all middle schools combined.

The results of the statistical analyses are shown in Tables A-D in Appendix E. The following results were obtained:

1) public middle school students demonstrated statistically significant gains on all test scores in grades 6-8;
2) parochial middle school students demonstrated statistically significant gains on all test scores at grades 6 and 8, and in Reading and Total Reading tests at grade 7;
3) NCEC program students demonstrated statistically significant gains on all test scores in grades 6-8;
4) all participants when schools were combined demonstrated statistically significant gains on all test scores in grades 6-8.

Table M-5 presents the mean grade equivalent scores associated with the standard scores used in the statistical analyses. These results are also portrayed graphically in Figures M-2 - M-4. (For those readers who are interested in examining the results for each subtest in each group, those

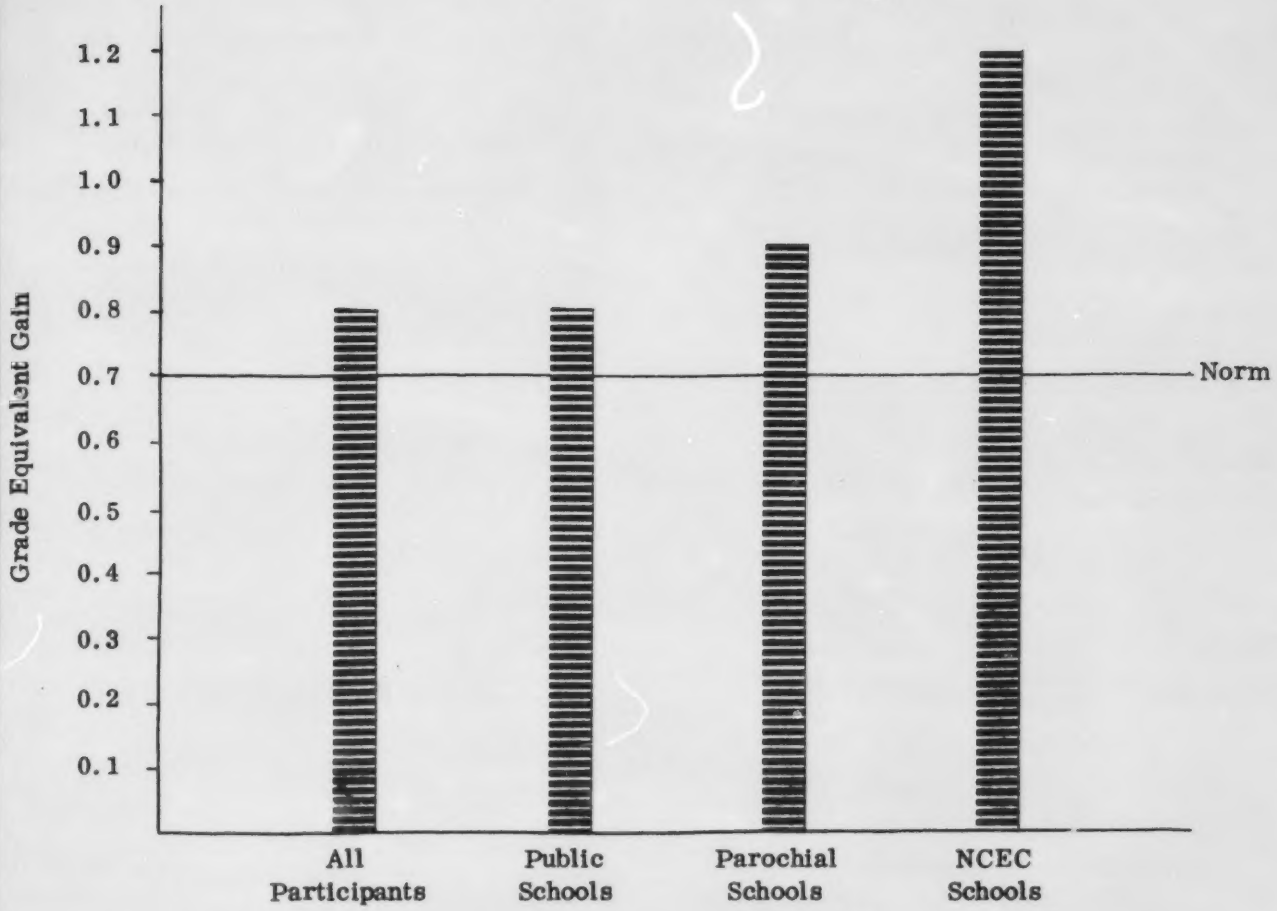


Figure M-2: Gains in Total Reading of Four Middle School Program Groups in Grade 6

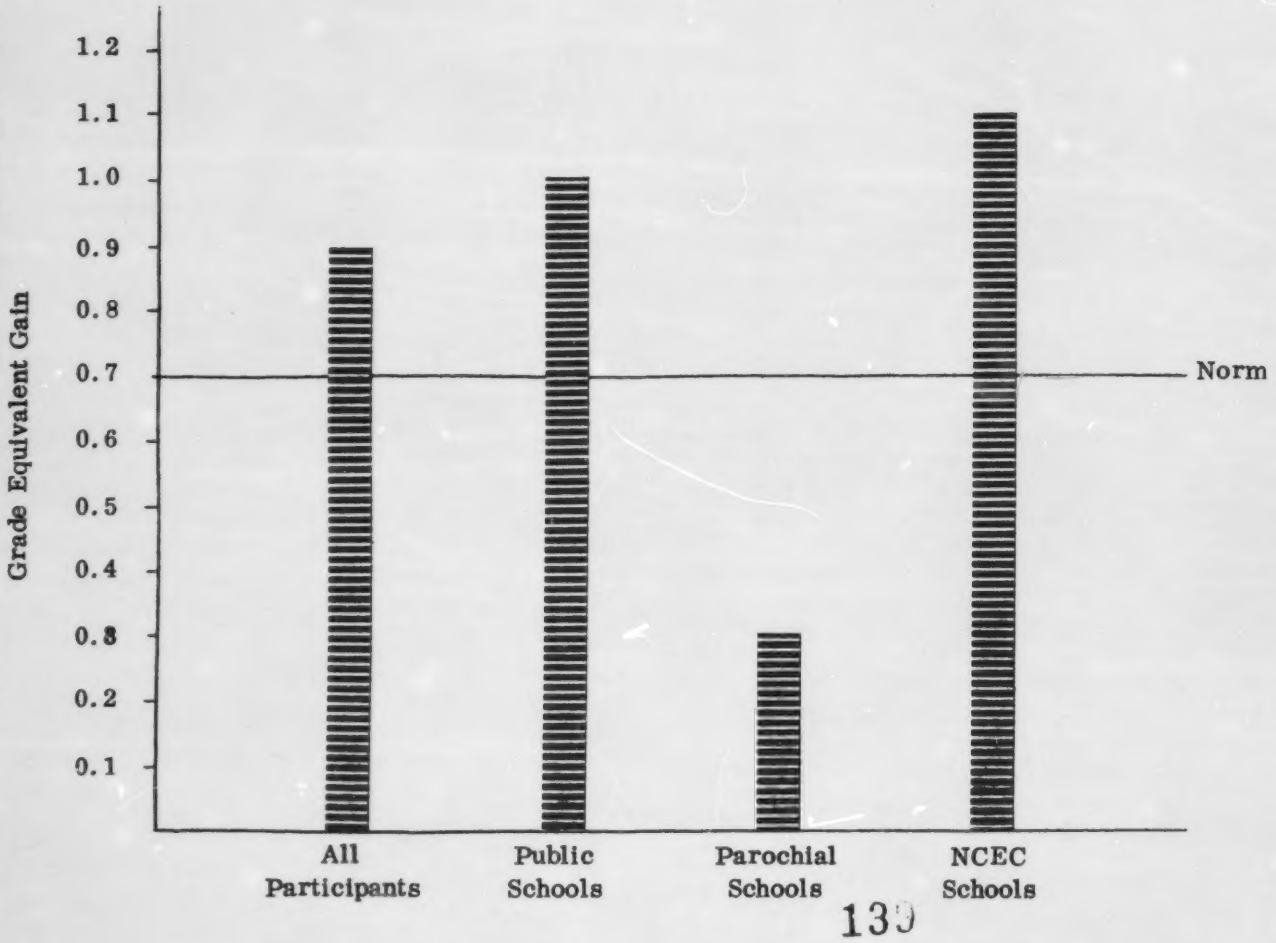




Figure M-3: Gains in Total Reading of Four Middle School Program Groups in Grade 7

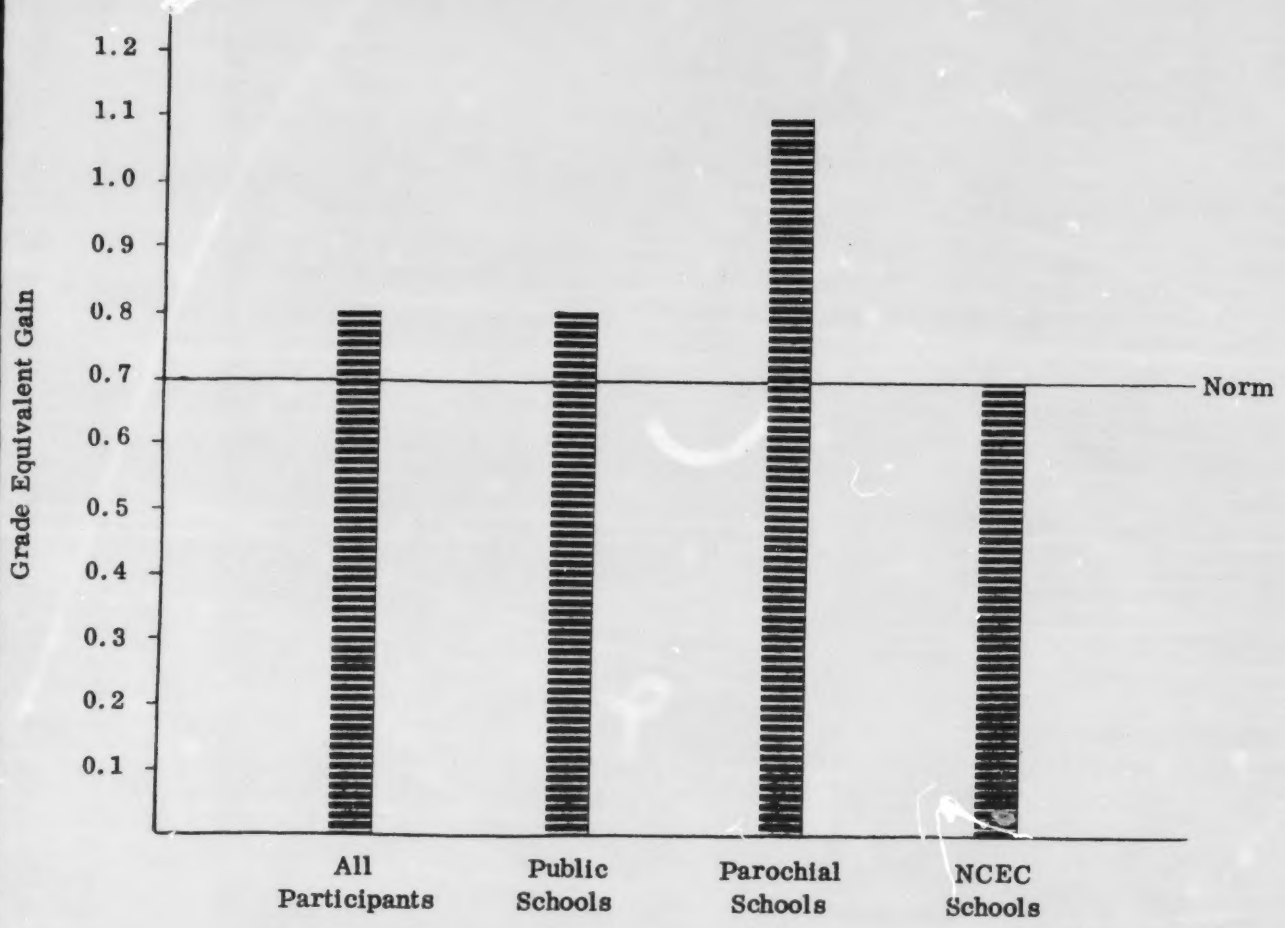


Figure M-4: Gains in Total Reading of Four Middle School Program Groups in Grade 8

Table M-5

Summary of Mean Grade Equivalent Scores in Total Reading
Across Four Middle School Program Groups

| Group | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Grade 6 | | |
| All Participants | 3.6 | 4.4 | 0.8 | 1.1 |
| Public Schools | 3.4 | 4.2 | 0.8 | 1.1 |
| Parochial Schools | 4.3 | 5.2 | 0.9 | 1.3 |
| NCEC Schools | 3.7 | 4.9 | 1.2 | 1.7 |
| | | Grade 7 | | |
| All Participants | 3.9 | 4.8 | 0.9 | 1.3 |
| Public Schools | 3.6 | 4.6 | 1.0 | 1.4 |
| Parochial Schools | 5.0 | 5.3 | 0.3 | 0.4 |
| NCEC Schools | 3.9 | 5.0 | 1.1 | 1.6 |
| | | Grade 8 | | |
| All Participants | 4.5 | 5.3 | 0.8 | 1.1 |
| Public Schools | 4.1 | 4.9 | 0.8 | 1.1 |
| Parochial Schools | 5.8 | 6.9 | 1.1 | 1.6 |
| NCEC Schools | 4.8 | 5.5 | 0.7 | 1.0 |

data are presented in Tables A-D in Appendix F.) Large gains were made by all groups across all grades except for the parochial school students in grade 7. Significant gains ranged from 7 to 12 months in grade equivalent score. Grade 7 parochial school students gained only three months in Total Reading attributable to the lack of gain in Word Knowledge and the slight gain in Reading Comprehension. (See Table C, Appendix E.) The monthly rate of gain exceeded the projected rate of .7 months for every group except the seventh grade parochial school students.

Monthly gain rates for all but these students ranged from 1.0 to 1.7 months in grade equivalent score for each month of instruction.

Public school students scored lower than parochial school students on both pre-test and post-test, and made smaller gains during the year in grades 6 and 8. NCEC program students tended to score between the public and parochial school students and in grades 6 and 7 made the largest gains of the three groups. The monthly gain rates for NCEC program students ranged from 1.0 to 1.7 months in G.E. score per month of instruction.

In addition to grade equivalent scores, the students' reading scores were transformed into percentiles and NCE's. These scores provide further assessment of the degree of achievement of the students, relative to other children their same age and school level. A summary for Total Reading is shown in Table M-6. (Percentiles and NCE scores for each subtest and each group are found in Tables A-D in Appendix G.) Table M-6 shows mean scores for both pre- and post-tests in terms of their national percentile rank and the accompanying NCE gain. An increase in the percentile standing from pre- to post-test would indicate that the students were achieving at a rate greater than their past achievement. That is, they would have moved up in standing with respect to the norm group. As the table shows, the children entered the program well below the average (50th percentile). Pre-test means ranged from the 6th to the 20th percentile. While most post-test means still remained below the median

Table M-6

Summary of Percentile and NCE Gains in Total Reading
Across Four Middle School Program Groups

| Group | Percentile Pre | Post | Gain | NCE Gain |
|---|---|---|---|---|
| | | Grade 6 | | |
| All Participants | 10 | 14 | 4 | 4.2 |
| Public Schools | 8 | 11 | 3 | 3.8 |
| Parochial Schools | 18 | 23 | 5 | 3.7 |
| NCEC Schools | 11 | 20 | 9 | 8.1 |
| | | Grade 7 | | |
| All Participants | 8 | 18 | 10 | 10.3 |
| Public Schools | 6 | 16 | 10 | 11.8 |
| Parochial Schools | 20 | 23 | 3 | 2.1 |
| NCEC Schools | 8 | 20 | 12 | 11.9 |
| | | Grade 8 | | |
| All Participants | 10 | 14 | 4 | 4.2 |
| Public Schools | 6 | 11 | 5 | 6.9 |
| Parochial Schools | 20 | 30 | 10 | 6.7 |
| NCEC Schools | 11 | 16 | 5 | 5.1 |

nationwide, students did show a faster rate of achievement in Total Reading for all grades. Students gains ranged from 3 to 12 percentile points from pre-test to post-test.

Another view of the impact is gained from examination of the NCE scores. NCE's are Normal Curve Equivalents, a "new" score with a mean of 50 and a standard deviation of 21.06. The scale was developed and disseminated by the U.S. Office of Education. The scale closely matches the percentile distribution,

hence has the qualities of interpretation inherent in percentile scores. However, the scale is also an equal interval scale and can be used in arithmetic calculations, while percentiles cannot. The NCE scale permits percentile scores from any norm referenced test to be transformed to an NCE score. These scores can then be aggregated across the state or country to determine the overall impact of Title I. According to OE materials, "Whenever the evaluation shows an NCE gain greater than zero, it means that the Title I pupils profitted from participating in the project. In general the larger the NCE gain, the more effective the project."

Examination of NCE gains shown in Table M-6 reveals that the Title I Project has had a positive effect upon its participants. NCE gains ranged from 2.1 to 11.9 units.

Performance Objectives

Performance objectives in reading were established to serve as instructional guides in the individualized program. A sample of the Performance Objective Summary Sheets on which teachers rated the students' achievement of the specific objectives were selected at random for analysis. (The percentages of middle school students at each grade who have achieved each of the performance objectives as rated by teachers are presented under separate cover.)

For the most part, large proportions of students were rated as having achieved the objectives, although there were some objectives which did not achieve high ratings. For students at the middle school level, Phonic Analysis objectives received the highest focus. In two-thirds of the cases, 80% or more of the students accomplished these objectives. High levels of achievement

resulted in such areas as a student's ability to identify consonants, blends, and digraphs.

Collectively, Structural Analysis objectives received only moderate focus. In almost one-half of the cases 50 to 80 percent of the students achieved the objectives. Syllabication received the highest degree of focus, while Affixes received the least.

The area of least concentration was the Comprehension Skills objectives. In one-third of the cases less than 50% of the students achieved the objectives. Such areas as paragraph summarizing and cause-effect relationships recorded the lowest levels of mastery.

Reference and study skills received limited focus as reflected by the moderate achievement of objectives in this area. Students displayed a high level of achievement in alphabetizing words. Outlining was the area of least achievement--in two-thirds of the cases the objective was rated as not accomplished.

## Recommendations

Based on the findings of the evaluation, the following recommendations are offered:

1. Continue to provide small group workshops as initiated this year with time set aside for teachers to share ideas and materials and to discuss techniques and problems.

2. Establish a regular schedule (e.g., one day per quarter) during which the Title I teachers are available for meetings with the classroom teachers to discuss specific accomplishments and needs of the student in the Title I program.

3. Utilize a newsletter to increase and direct communication between the classroom teachers and Title I teachers.

4. Continue to eliminate those spaces not appropriate for Title I instruction. Title I space needs should receive a priority at least as high as CH 766 and bilingual education space requirements.

5. Explore the possibility of providing in-service training for classroom teachers to increase the relationship and communication between Title I reading and reading in the content areas.

6. Consider the use of consultants and programs provided by local colleges and universities to provide some training in areas of interest to the Middle School teachers.

7. Utilize video-tape presentations for demonstration lessons, the use of the Sucher-Allred Test, and diagnostic testing during orientation and in-service training.

8. Initiate some tangible motivational devices to recognize the student's achievement during the Title I reading program.

9. Establish a committee of teachers to assist the Associate and Assistant Directors to identify and compile inexpensive or free common/everyday materials that can be used in the Middle School reading program to develop reading skills and practical competencies.

10. Consult with the State Department of Education about ordering an advance supply of materials. A program of such magnitude and importance deserves some special consideration in this regard.

11. Pilot test the PLUS 10 Vocabulary Books again with another group of five teachers.

12. Establish a Materials Resource Center for use by Title I teachers, with a small budget for the acquisition of a variety of materials.

13. Prepare specific plans for the Community Relations Department to overcome the obstacles to full implementation of the local and district and citywide PAC's.

14. Increase parental involvement and communication with teachers apart from the formal establishment of PAC's.

15. Conduct a separate orientation for Middle School teachers and aides, perhaps limiting experienced teachers to ½ day or a full day depending on the topics required to be reviewed. Continue to separate experienced and inexperienced Title I teachers and provide several days orientation as required for the inexperienced teachers.

16. Investigate the reasons for the poor attendance rate among the middle school students.

17. Test all public and parochial school students, using tests supplied by the program, who have been identified as eligible by the revised checklist and who do not have test scores. Teachers should score the tests immediately to determine whether the students meet the cutoff score criterion.

18. Establish a hiring, supervisory and training process specifically for new teacher aides. (To be accomplished by the Assistant Director of Aides.)

19. Assess the training needs for aides currently employed, and provide training and related supervision. (To be accomplished by the Assistant Director of Aides.)

# NIE DEMONSTRATION PROJECT

## Description of Program

In the Fall of 1975, the Boston Public Schools initiated a special project funded by the National Institute of Education (NIE). NIE had instituted six major studies of issues in compensatory education ranging from examination of current practices to the study of laws and regulations. Boston was awarded funds to participate in the study dealing with the effects of changing the manner in which Title I funds are allocated within school districts. The 1975-76 school year was devoted to substantial planning efforts which involved parents, federal and state education officials, school department personnel and community agencies. During 1976-1977, the instructional program was implemented. Funding for the implementation of the Demonstration Project was divided between NIE and Title I monies. The total budget was $340,322, with $262,000 derived from the Title I allocation to the school system, and $78,322 provided by NIE. In effect, the school system's Title I funds supported the instructional aspects of the program, while the NIE funds supported the administrative and research requirements.

Thirteen teachers served 546 children in grades 1-5 in nine schools--seven public and two parochial. The schools--Adams, Beethoven, Bunker Hill, Lee, Murphy, Sumner, Winship, St. Angela, and Sacred Heart--were identified from those not selected for Title I services. The schools selected were determined

to have the highest need based upon deficiency in reading achievement. In contrast to the prescribed Title I selection procedures based upon low-income and welfare incidence, three new indexes were used to rank and select the schools: the number of students reading below grade level, the percentage of students reading below grade level, and the severity of the reading deficiency in each school.

Instruction followed the model of the Elementary Enrichment Project, with some variations. Students were served by a teacher and an aide in groups of seven in six 45 minute periods. The instruction was highly individualized using the SWRL/Ginn Reading Placement Aid for placement, a modified Individual Prescriptive Work Plan for planning, and the Ginn Communication Skills Program as basic instructional materials.

The project was administered by a project director (acting assistant director). The director was assisted by a reading specialist, principally responsible for supervision of instruction, and a community field coordinator and two project aides who were responsible for parental involvement in the NIE demonstration schools.

## Evaluation of Program Inputs and Processes

For the purpose of this section of the report, inputs are defined as those factors which the school department assigns to the program (e.g., facilities, materials, aides, etc.); processes are the functional, operational aspects (e.g., supervision, instruction, scheduling, etc.). The results reported in this part are based upon interviews, questionnaires, records, and on-site observations.

### Administration and Supervision

The NIE staff unanimously agreed that the Demonstration Project was well organized and professionally administered. All of the program's teachers and building principals indicated a clear understanding of the project's goals and program guidelines, as well as knowledge of the differences between the regular Title I program and the NIE Demonstration Project. All of the teachers reported that the Title I administration was responsive to their needs, and also noted that the principals were cooperative and helpful.

Similarly, the principals were very satisfied with the Title I administration. They all reported that they were kept well informed about the operation of the program, and were pleased with the cooperation and communication they had with the project's administration.

The supervision of the NIE Demonstration Project was also rated favorably by both NIE teachers and principals. All of the teachers reported that they had received adequate supervision during the year, and were very satisfied with the

assistance they had received from their Title I supervisor. The teachers in the NIE project noted that their supervisor was cooperative and responsive to their needs. All but one of the principals confirmed the satisfactory supervision provided to the teachers in the project.

Only one concern regarding supervision was expressed by several NIE teachers. Approximately one-fourth of the teachers in the project felt that they could have used more specific help in establishing programs for their students this year. This is not an unusual finding since the individualized instructional system utilized in the Title I project is difficult to implement. It indicates, however, the need to identify as early as possible those teachers who require additional help and provide them with the extra training and supervision to insure the appropriate implementation of the instructional process.

Communication

The majority of NIE teachers were satisfied with the communication they had with the classroom teachers in their school. Two Title I teachers reported that they were not sure. All but three of the classroom teachers, and all of the principals confirmed that there was sufficient cooperation and communication between themselves and the NIE teachers within their school. In addition, the majority of Title I teachers expressed their satisfaction with the cooperation they received from classroom teachers in diagnosing the needs of the students they served. Further evidence of the high degree of cooperation among the NIE

staff, administration and classroom teachers is indicated by the fact that over 80% of the classroom teachers, and all the building administrators reported no substantial interference between the Title I program and regular classroom activities.

Despite the positive testimony concerning cooperation and communication from all sources, approximately two-thirds of the NIE teachers felt that a need existed for still better communication between themselves and classroom teachers. In particular, about one-fourth of the NIE teachers reported their desire for more discussion of student progress with the classroom teachers.

As a group, the NIE teachers were divided regarding the opportunities available to them for exchange of ideas, materials, and methods with other NIE teachers, despite several in-service meetings during the year. Although approximately one-fourth of the teachers felt that the opportunities available to them for exchange of materials and ideas were adequate, an equal number reported that they were not, and the remaining 50% were uncertain. They were similarly divided regarding a need for better communication among Title I teachers in the NIE schools.

Facilities

The physical facilities for Title I instruction is, to a large degree, dependent upon the "extra" space available within the school. All of the NIE teachers reported that their classroom teaching facilities were adequate for effective instruction.

Table N-1

Descriptions of the Environment of the Title I Program as Provided by NIE Title I Teachers

| | | | |
|---|---|---|---|
| Accommodations: | Classroom-100% | Hallway-0% | Other-0% |
| Room Size: | Excellent-92% | Adequate-8% | Inadequate-0% |
| Seating: | Fixed Seats-0% | Moveable-100% | Both-0% |
| Accommodations for more than one group: | Good-92% | Fair-0% | Poor-8% |
| Acoustics: | Good-100% | Fair-0% | Poor-0% |
| Lighting: | Good-67% | Fair-17% | Poor-17% |
| Distractions: | Minimal-75% | Acceptable-25% | Excessive-0% |
| Temperature: | Too Hot-17% | Comfort Range-83% | Too Cold-0% |
| Humidity: | Dry-12% | Moderate-75% | Damp-0% |
| Material Storage Space: | Excellent-58% | Adequate-25% | Inadequate-17% |

Table N-1 presents the descriptions of the teaching environment provided by NIE teachers in March. The results shown in the table mirror the teachers' reported satisfaction with their facilities, as the environmental factors were rated favorably by the majority of teachers.

In-service

In addition to orientation at the beginning of the year, three in-service sessions were held for NIE teachers and aides. In November, teachers and aides met separately for training concerning the instructional process. In February, the in-service session included presentations by Title I administration and evaluation staff, a materials consultant, and a representative of Abt Associates concerning the NIE Demonstration Study. The May in-service meeting provided for discussion, classroom demonstration, materials displays, parent-teacher conferences, and evaluation of the program.

Approximately one-fourth of the NIE teachers reported that the in-service training was useful. The remaining teachers were equally divided between finding the in-service of little value and being undecided about its effectiveness. There was no consensus of opinion concerning additional topics the teachers would like to see presented during in-service training. However, the suggestions offered by teachers included: use of games, additional methods of teaching reading, demonstrations of teacher-made materials, and increasing parent participation.

Instruction

As noted previously, instruction followed closely the model of the Elementary Enrichment Project. All but one of the NIE teachers reported that they had identified individual learning needs for each child in their classes; one was not sure. All but two teachers noted that individual instructional sequences were

planned for each child. Further, all of the teachers reported that their lessons were not conducted for the class as a whole and they provided for individualized instruction, whether in a small group or one to one situation. With the exception of one teacher, the NIE staff reported that the student-teacher ratio was appropriate for the type of instruction needed by the children.

Six of the eleven teachers responding reported regular use of the modified Individual Prescriptive Work Plan, and three reported they did not use the Plan regularly. However, only two teachers felt that the Plan was an appropriate tool for planning individualized instruction. While only three teachers reported that the Plan was not appropriate, the majority were uncertain about the usefulness of this tool in planning for their classes.

Observation of eight NIE classes revealed that, on the average, 5 students were in attendance. Half of the time students were in two groups, and in each of two of the classes one student was working independently. In seven out of eight observations, teachers were engaged in such direct instructional activities as explaining, demonstrating, questioning, and supervising student work. In one case the teacher was correcting worksheets. Aides, on the other hand, were observed in direct instructional activities half of the time and performing other support tasks the rest of the time.

Materials

The large majority of NIE teachers reported their satisfaction with the quantity and quality of instructional materials available to them. In addition they

reported that general school supplies were available in sufficient quantities for effective instruction. Only one teacher expressed dissatisfaction with the quality of materials and quantity of general school supplies.

As noted earlier, NIE teachers were divided in their opinion of the adequacy of opportunity for exchange of ideas and materials among themselves, as well as whether there was a need for better communication among the NIE teachers. Despite this uncertainty, approximately two-thirds of the teachers reported that they had not been able to share some of the good materials prepared by the other Title I teachers.

The NIE teachers were asked to evaluate the Ginn Communication Skills Program that was used as the principal instructional tool this year. The majority of teachers, though not all, noted that they had used three components of the program--reading, composition, and oral expression. Nine out of ten teachers agreed that the reading component was the most effective component. Four of the teachers rated the composition component as least effective, and three others felt that the oral expression component was least useful. Teachers noted many strengths of the program including: the high interest level of the stories, the sense of accomplishment for a child upon completion, the well organized approach and structure of the materials, and the excellent choice of vocabulary. Among the weaknesses in the Ginn Communication Skills Program cited by the teachers were the lack of readiness materials, an insufficient number of worksheets for Blocks 1 and 2, and the fact that some of the stories were for higher level students.

Teachers were also asked their opinions concerning the use of the same reading series for students in Title I classes that are used in the regular classes. All of the teachers agreed that Title I classes should not use the same reading series or materials to remediate the students' deficiencies that are used in the regular classes. Although five of the teachers reported that "some" or "a few" of their students would benefit more if the regular classroom reading series were used in Title I classes, five others were not sure. The majority of teachers felt that it would be most helpful for Grade 1 students to use the same reading series in both Title I and regular classroom reading, as in fact was permitted in the project. Only two teachers felt that using the same reading series in both settings would encourage more communication and cooperation between Title I and classroom teachers; the remaining eight were uncertain. However, all of the NIE teachers agreed that they would prefer that the Title I classes use a different reading series from that used in the regular classroom.

A substantial number of teachers felt that more commercially prepared materials should be made available. Many of the requests for new materials were for additional reading readiness and primer level materials.

Morale

All but one of the NIE teachers reported that they were confident in their qualifications and abilities to teach remedial reading in the Demonstration Project. One teacher was not sure. The large majority reported that their

morale was high, and that they enjoyed working in the program. All of the respondents felt that, as a Title I staff member, they were accomplishing something worthwhile.

Objectives

The entire Title I teaching staff and the majority of classroom teachers reported a clear understanding of the objectives of the NIE program. Similarly, all of the principals indicated that they understood the objectives of Title I, and in particular, the objectives of the NIE Demonstration Project. Only two NIE teachers, one principal and a few classroom teachers remained unsure that the objectives of the project met the needs of the students.

An important aspect of the instructional system is the set of specific performance objectives developed and refined by program staff and correlated with the Ginn program. However, only six of the NIE teachers reported using the specific performance objectives for each of the students with whom they work. Two teachers reported that they did not use these objectives. As a group, the program's teachers were undecided whether the specific performance objectives were helpful as guides to pupil instruction and evaluation. Although four of the teachers reported that the objectives were beneficial to teaching students and assessing their progress, an equal number of teachers felt that they were not. The remaining two teachers were undecided.

Orientation

Only one of the NIE teachers responding indicated that the orientation was unsatisfactory. This teacher noted: "It was unsatisfactory because I am new to the program and there was so much to learn. Two days were not sufficient - it should have been a week." Two other teachers who were satisfied with the orientation also commented on how much had to be accomplished during the orientation program. All of the aides reported satisfaction with the orientation. While the orientation process was well received, the reader should recall that some teachers expressed a desire for more help in instituting programs for their students. Since the NIE teachers were new to Title I, though all experienced teachers, their desire for early support and assistance is to be expected. Those teachers requesting assistance should be identified for further orientation or training sessions and individual supervision.

Parental Involvement

Parents were actively involved in the planning phase of the NIE Demonstration Project. Their involvement continued this year through the efforts of the community field coordinator and two project aides who successfully fostered the establishment of local Parent Advisory Councils (PAC's) in each of the nine schools. The PAC's were very active, holding regular meetings, often several in one month. However, communication between the parents and the Title I staff was still a source of concern to many program teachers. Only three of the teachers reported having sufficient communication with the parents of their students. On the average,

the teachers reported meeting with four parents this year. Only three teachers were satisfied with the reporting of student progress in the program to parents of their students. (A pupil progress report was sent home three times during the year.) Overall, the majority of NIE teachers were either dissatisfied or uncertain regarding the communication they had with their students' parents. All but one of the project's teachers felt that the parents of their students had not taken an active interest in the Title I program. One teacher was not sure.

Program Initiation and Attendance

The program was initiated quite early in the school year. The typical starting date (obtained for a sample of 251 students selected from student records) for NIE school students was September 27. As shown in Figure N-1, 90% of the students began before the end of September. Only 5% of the students began after October. The average total days of attendance in Title I classes through the end of May for NIE school students was 112 days. The average attendance rate was 74%

Student Evaluation

Approximately three-fourths of the NIE teachers agreed that the process for identifying Title I children (a specially prepared checklist) selected those most in need of help. The remaining teachers were not sure. Similarly, all but one of the principals and most of the classroom teachers agreed that, for the most part, the program was serving the children who most needed remedial help.

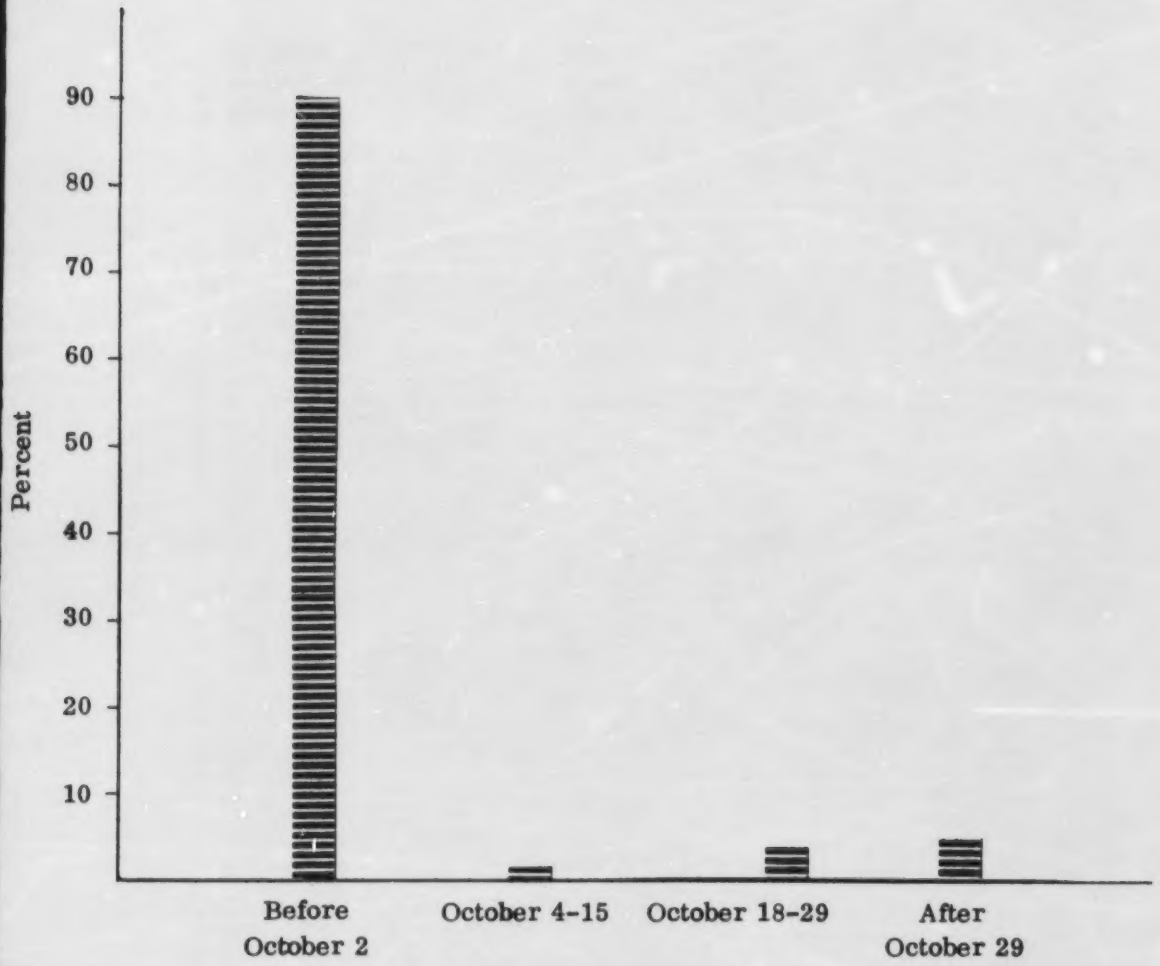


Figure N-1: Starting dates for NIE students

Concerning the tests used in the program, nearly half of the teachers were uncertain whether the diagnostic tests and aids were adequate to identify student strengths and weaknesses. Three teachers reported the tests were helpful in assessing student abilities, and three others felt that they were not.

While five of the NIE teachers were satisfied that the standardized achievement test presently used to evaluate the program adequately measured its outcomes, three teachers did not agree, and three were not sure. The majority of teachers reported that they would also like to see assessment of the students' self-concept and attitudes toward school and learning included in the evaluation of the program.

Teacher Aides

All of the NIE teachers were pleased with the good rapport they had with their teacher aides. They all reported using the aides in an instructional capacity rather than clerical. All of the teachers perceived the aides as an asset to the program, noting that the aides presence in the classroom increased the likelihood of individualizing the instruction of the students.

Similarly, the aides were generally pleased with the relationship they had with their NIE teacher. All but one of the aides reported a clear understanding of the role of the teacher aides in the Title I program. However, five of the aides reported that they would have liked more accurate information regarding the nature of their duties and responsibilities at the beginning of the program.

Nevertheless, most of the aides were satisfied with the coordination of efforts and planning between themselves and their Title I teacher, and felt that their services were used effectively. However, four teacher aides still reported that there were times during the day when they had nothing to do. Not surprisingly therefore, three of the aides felt that more direction from their teacher would have been beneficial, and four of the aides reported that the teachers should be provided with more accurate information regarding the aides' role in the Title I program.

Most aides rated the morale of the teacher aides in the program as high, though one aide was not sure and another reported that morale was low. All of the aides enjoyed working in the Title I program and reported working well with the students. The aides agreed that the children were glad that they were in the classroom to help them.

The aides reported spending most of their time in activities involving direct contact with students, and noted that their presence in the classroom significantly increased the amount of individualized instruction and small group activity available to the student. While the majority of aides reported spending most of their time in instructional activities, seven aides felt that a great deal of their time was spent preparing materials and correcting tests and papers.

All of the aides were confident in their abilities to handle the responsibilities of their job, and despite their desire for more information at the beginning of

the program, all but one of the aides reported that they had received adequate training to handle their instructional involvement. The majority of aides felt that the in-service training meetings were useful; however, they felt that additional training, directed toward improving their role in the Title I project, would be beneficial. Most of the suggestions aides offered for additional training were for courses in reading instruction. Other suggestions for in-service training included college courses for credit and training in child psychology.

Time

The majority of NIE teachers stated that, in general, too much paperwork is required in the Title I program. Lesson plans were mentioned most often by the teachers as the source of this burden. The NIE teachers were almost evenly divided concerning the amount of time available to them for paperwork. Six of the teachers reported that there was sufficient time to complete the instructional planning required, while five others felt there was not enough time. Similarly, five of the Title I teachers felt that enough time was provided to them to complete other Title I paperwork. Three others felt that not enough time was available for general paperwork and three were not sure. There was no consensus among the teachers regarding the amount of time they had available to them. While two of the teachers indicated that no time was available to them during the day for planning and paperwork, an equal number of teachers reported having 45 minutes a day for paperwork. Four teachers reported having 30 minutes, and three stated that they had less than 30 minutes a day for planning. The discrepancy among the

teachers' reports of time available is quite puzzling, particularly since all of the Title I teachers and principals agreed that the NIE teachers do not regularly assist in such non-teaching school functions as recess duty, bus supervision, or playground duty. However, all but one of the building principals felt that Title I teachers should be obliged to assist in non-teaching functions as do regular classroom teachers.

Value of the Program

All of the building principals and the overwhelming majority of classroom teachers were satisfied with the work of the NIE teachers in their schools. In addition, they considered the Title I teachers valuable assets to their schools. Such comments as:

> We are most pleased with the entire program. It has been a great asset to our school. (principal)
>
> I find my Title I students eager to go to reading and during any free time they are doing extra reading from books in my room and the Title I room. When they have to read orally in their class they have more confidence. Title I has helped my children greatly. (classroom teacher)

It is not surprising that all of the principals and 97% of the classroom teachers recommended that the Title I NIE Demonstration Project continue next year. As classroom teachers noted:

> There has been a marked improvement in the reading ability (and attitudes) in my classroom. _____ is an excellent, efficient, involved teacher. She has been a godsend to my class . . . hope for the program to continue. (classroom teacher)

> In some individual cases a better self-concept is noticeable. Some . . . better academic achievement. Children, and some parents, do not realize the seriousness and worth of the program. (classroom teacher)

Parents, too, noted frequently their support for the program. Among their comments were:

> This program is an important and meaningful program and has helped my child tremendously. I do hope it will continue as she looks forward to it and needs it. (parent)

> I have been very happy to have my son in this program. He has needed this help very badly. I only hope it will be available to him next year. (parent)

## Evaluation of Program Outcomes

### Standardized Reading Tests

As in the case of the elementary program, the children in the NIE program were administered the Reading subtests of the Metropolitan Achievement Tests, 1970 edition. In grades 2-6, tests were administered in October and May, with seven months of instruction between pre- and post-tests. Post-tests only were administered to grade 1 students.

Gains between pre-test and post-test in grades 2-6 on Word Knowledge, Reading, and Total Reading standard scores were analyzed by means of a t-test for correlated data to determine whether the gains were statistically significant. Means and standard deviations were calculated for the post-tests in grade 1.

The results of the statistical analyses are reported in Table N-2. Statistically significant gains were found in grades 2-5 for NIE program students on all test scores.

Average grade equivalent scores corresponding to the mean standard scores used in the statistical analyses are shown in Table N-3. The gains in grade equivalent score are graphically portrayed in Figure N-2. In grades 2 and 5 students gained eight months in Total Reading during the seven month period, with a monthly gain rate of 1.1 exceeding the norm rate of gain. Grade 5 students made a particularly large gain in comprehension (1.1 G.E.) during the year. Students in grade 4 gained six months in grade equivalent in Total Reading,

Table N-2

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
NIE Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 79 | Pre | - | - | - |
| | | Post | 37.48 | 9.73 | |
| Reading | 78 | Pre | - | - | - |
| | | Post | 35.17 | 8.79 | |
| Total Reading | 78 | Pre | - | - | - |
| | | Post | 35.56 | 8.85 | |
| | | | Grade 2 | | |
| Word Knowledge | 75 | Pre | 41.96 | 6.45 | 12.41*** |
| | | Post | 52.56 | 6.86 | |
| Reading | 73 | Pre | 38.40 | 6.77 | 10.53*** |
| | | Post | 48.95 | 8.73 | |
| Total Reading | 72 | Pre | 39.07 | 5.21 | 14.92*** |
| | | Post | 50.04 | 7.19 | |

Table N-2 (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 77 | Pre | 51.71 | 6.18 | 5.98*** |
| | | Post | 55.57 | 7.08 | |
| Reading | 76 | Pre | 47.83 | 8.15 | 4.42*** |
| | | Post | 52.74 | 9.07 | |
| Total Reading | 76 | Pre | 48.80 | 6.59 | 7.63*** |
| | | Post | 53.30 | 6.49 | |
| | | | Grade 4 | | |
| Word Knowledge | 96 | Pre | 57.16 | 6.74 | 8.93*** |
| | | Post | 61.73 | 6.58 | |
| Reading | 95 | Pre | 53.27 | 8.95 | 8.14*** |
| | | Post | 60.58 | 6.27 | |
| Total Reading | 95 | Pre | 54.36 | 6.79 | 11.20*** |
| | | Post | 59.98 | 5.43 | |

Table N-2 (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | Grade 5 | | | |
| Word Knowledge | 94 | Pre | 61.71 | 8.27 | 6.60*** |
| | | Post | 67.67 | 8.23 | |
| Reading | 93 | Pre | 57.66 | 10.53 | 7.86*** |
| | | Post | 68.01 | 9.36 | |
| Total Reading | 93 | Pre | 58.71 | 9.20 | 8.63*** |
| | | Post | 66.30 | 7.97 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

gaining on the average .9 G.E. months for each month of instruction, above the rate of .7 generally cited for educationally disadvantaged students. Grade four students also gained more in comprehension than vocabulary. Students in grade 3 showed the least gain, only 3-4 months in grade equivalent during the year. (These findings for grade 3 are consistent with the results of the elementary program, in general.)

Grade 1 students, on the post-test, ended the year one month below grade level in Total Reading. In vocabulary the first grade students were one month below grade level, while in comprehension they were two months below the norm.

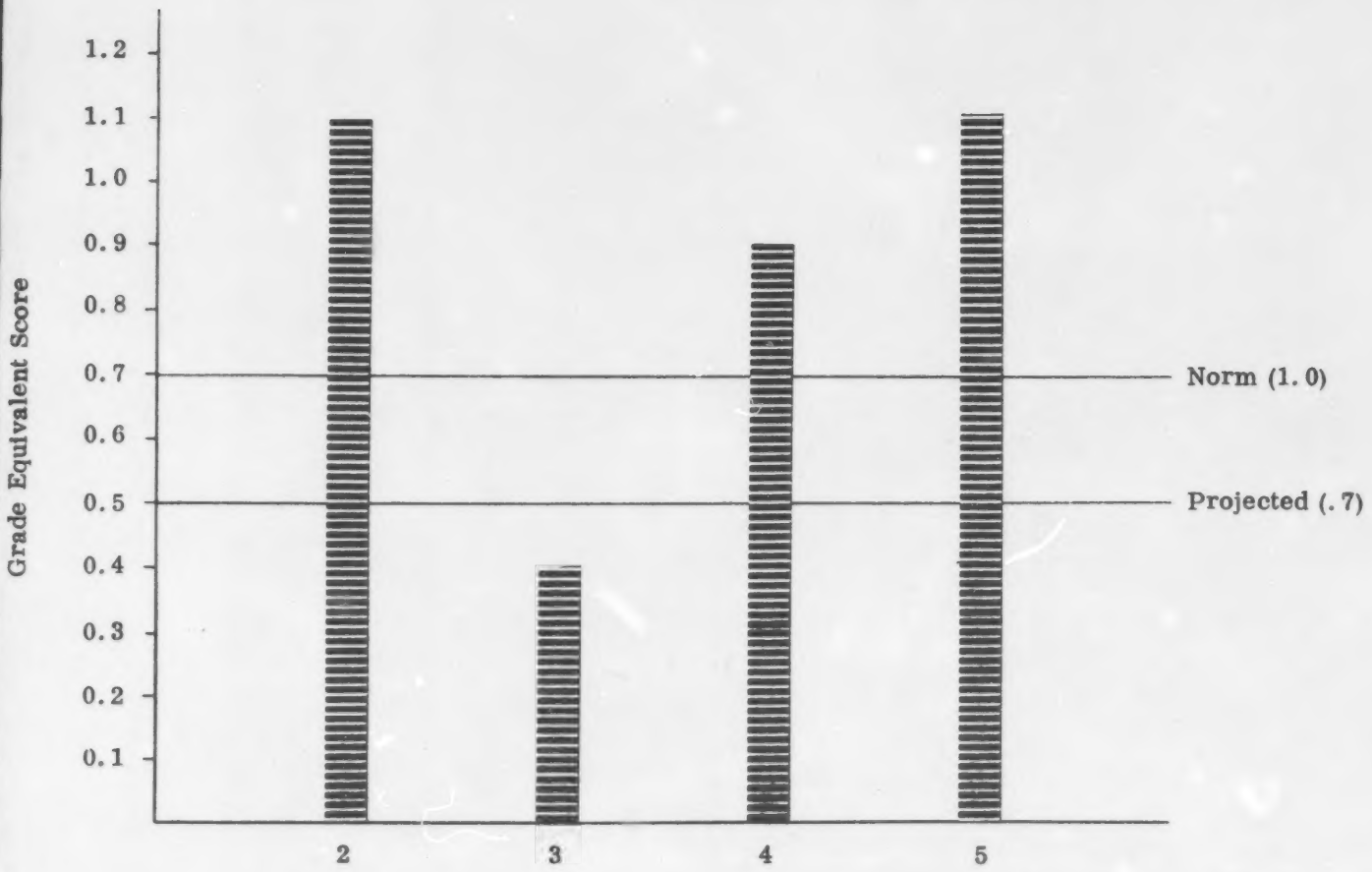


Figure N-2: Gains in Total Reading for students in Grades 2-5 - NIE Program

Table N-3

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, NIE Program

| Grade | Pretest G.E. Mean | Posttest G.E. Mean | Mean G.E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.9 | 2.6 | 0.7 | 1.0 |
| 3 | 2.5 | 2.9 | 0.4 | 0.6 |
| 4 | 3.0 | 3.5 | 0.5 | 0.7 |
| 5 | 3.5 | 4.2 | 0.7 | 1.0 |
| | | Reading | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.7 | 2.3 | 0.6 | 0.9 |
| 3 | 2.3 | 2.7 | 0.4 | 0.6 |
| 4 | 2.7 | 3.4 | 0.7 | 1.0 |
| 5 | 3.1 | 4.2 | 1.1 | 1.6 |
| | | Total Reading | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.7 | 2.5 | 0.8 | 1.1 |
| 3 | 2.4 | 2.7 | 0.3 | 0.4 |
| 4 | 2.8 | 3.4 | 0.6 | 0.9 |
| 5 | 3.3 | 4.1 | 0.8 | 1.1 |

Additional evidence of the gains made by students in the NIE program is shown in Table N-4, where percentile and NCE scores are presented. An increase in the percentile standing from pre- to post-test would indicate that the students were achieving more than they had in the past. That is, they would have moved up in standing with respect to the norm group. As the table shows, the children entered the program well below the average (50th percentile). Pre-test means ranged from the 14th to the 36th percentile, with all but one below the 30th percentile. While the post-test means still remained below the median nationwide, in all but two of the cases students did show a faster rate of achievement in reading level.

Even for grade 3 students, where the results in terms of grade equivalent scores were not large, a gain in percentile rank in total reading and comprehension was found. Only for Word Knowledge scores at grades 3 and 4 was there no advancement in percentile score from pre-test to post-test.

Another view of the impact is gained from examination of the NCE scores also presented in Table N-4. NCE's are Normal Curve Equivalents, a "new" score with a mean of 50 and a standard deviation of 21.06. The scale was developed and disseminated by the U.S. Office of Education. The scale closely matches the percentile distribution, hence has the qualities of interpretation inherent in percentile scores. However, the scale is also an equal interval scale and can be used in arithmetic calculations, while percentiles cannot.

Table N-4

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Elementary NIE Program Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 38 | - | - | 43.6 | - |
| | 2 | 36 | 44 | 8 | 42.5 | 46.8 | 4.3 |
| | 3 | 28 | 26 | -2 | 37.7 | 36.5 | -1.1 |
| | 4 | 22 | 22 | 0 | 33.7 | 33.7 | 0.0 |
| | 5 | 16 | 20 | 4 | 29.1 | 32.3 | 3.2 |
| Reading | 1 | - | 34 | - | - | 41.3 | - |
| | 2 | 24 | 32 | 4 | 35.1 | 40.1 | 5.0 |
| | 3 | 16 | 26 | 10 | 29.1 | 36.5 | 7.4 |
| | 4 | 18 | 26 | 8 | 30.7 | 36.5 | 5.8 |
| | 5 | 14 | 20 | 6 | 27.2 | 32.3 | 5.1 |
| Total Reading | 1 | - | 36 | - | - | 42.5 | - |
| | 2 | 26 | 38 | 12 | 36.5 | 43.6 | 7.1 |
| | 3 | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| | 4 | 20 | 22 | 2 | 27.2 | 33.7 | 6.5 |
| | 5 | 14 | 18 | 4 | 27.2 | 30.7 | 3.5 |

The NCE scale permits percentile scores from any norm referenced test to be transformed to an NCE score. These scores can then be aggregated across the state or country to determine the overall impact of Title I. According to OE materials, "Whenever the evaluation shows an NCE gain greater than zero, it means that the Title I pupils profitted from participating in the project. In general the larger the NCE gain, the more effective the project."

The NCE score results presented in Table N-4 correspond directly to the results shown by percentile scores. Positive NCE gains were found in all cases except for students in grades 3 and 4 on the Word Knowledge subtest. These results confirm the positive effects of participation in the Title I NIE program.

Performance Objectives

In addition to the standardized test scores, data on the achievement of specific performance objectives were obtained from teacher ratings. As noted in the Evaluation Design, the Student Performance Objective Summary Sheets for the total group were tabulated.

The performance objectives are primarily important for guiding the teacher in the instructional process and secondarily to evaluation of the program. Their importance to and use by the teachers has already been documented earlier in this report. Percentages of students who have achieved each objective in each grade are presented under separate cover.

Students in the NIE Project worked on Reading Performance Objectives on eight levels, although the objectives for all eight levels were the same. Instead of composing each level of objectives in ascending order of difficulty, the NIE Project permitted teachers at any level to focus on objectives appropriate to the caliber of their students. The Performance Objectives were grouped into six categories: Structural Analysis (8), Phonetic Analysis (9), Comprehension Skills (9), Extended Reading (31), Composition (13), and Oral Expression (7). Within each section, except Extended Reading, the objectives were arranged in order of ascending difficulty. In Extended Reading, the objectives were arranged by topic area so that E.R.1, "Given a newspaper, the pupil will locate and report the weather forecast with not more than one error," is not substantially less difficult than E.R.31, "Given a 12 month calendar, the pupil will identify with 100% accuracy the following: a) the months of the year, b) the weekly organization, and c) the number of days in each month." Thus, teachers were at liberty to choose their own areas of concentration for instruction. The comprehensive set of objectives and analysis of the percent of students who achieved each are published under a separate cover.

## Recommendations

Based on the findings of the evaluation, the following recommendations are offered:

1. Institute a voluntary follow-up orientation for new Title I teachers, scheduled one or two weeks after the initial orientation with particular emphasis on establishing programs for the teachers' students.

2. Devote at least some portion of each in-service meeting to the discussion of problems and exchange of teaching ideas among the NIE teachers.

3. Recommend to principals and faculty senates that a portion of each released time program be devoted to communication between Title I and the classroom teachers.

4. Coordinate in-service training with the Elementary Enrichment Program particularly with regard to use of games and sharing of teacher-made materials.

5. Continue to work with the teachers to develop appropriate individualized planning techniques, and use of the performance objectives as guides to teaching and evaluating pupils.

6. Identify with the help of teachers additional readiness and primer level materials.

7. Increase parental involvement and communication with teachers apart from the formal establishment of PAC's.

8. Arrange meetings between program administrators and the SWRL representatives to determine whether changes in the SWRL placement tests can increase their placement accuracy.

9. Increase the number of teachers assigned to NIE schools where large numbers of elegible children remain without service.

10. Provide in-service training to teacher aides through the auspices of the Assistant Director of Aides in the teaching of reading and the Title I instructional process. Training should be for the inexperienced aides and those experienced aides who request such training.

11. Recommend to teachers to set aside a specific half hour of each day (based upon their school's schedule) for planning and paperwork.

# HEALTH EDUCATION PROGRAM

## Introduction

The Health Education Program is currently in its sixth year of operation. The services provided by the Health Education Program are provided by the Health Care Team. This year the Health Care Team consisted of a Coordinator, nine para-medics, a nurse, and a secretary. The social worker position, once part of the team, has not been filled again this year. The position of nurse was also vacant for much of the year. All present team members have had several years of experience in the program. Extensive record keeping procedures were maintained for services rendered to students and parents. The records were considered confidential and were kept at the Health Office in the Bowditch School in a locked file cabinet. A large room at the Bowditch School provided adequate office space for the Health Education Program.

The training required for the para-medics included: a basic course in nursing assistance, basic communication skills, and optional courses in social work methods.

In-service training of para-medics organized by the Coordinator was quite extensive. According to the coordinator, daily meetings were held during the first two months of school. After that time, there was one staff meeting per month at which some in-service training was provided. This training included

such activities as: reviewing medical terminology, discussing articles from medical health magazines, giving sample quizzes, and explaining prescriptions to parents.

## Health Services

The services of the Health Team were perceived by the staff to be supplementary to those of the school nurses. According to the para-medics, referrals were made most often by school nurses but also came from teachers, parents, and principals. The main responsibility of the para-medics was to facilitate delivery of necessary health services to Title I students by contacting parents and informing them of the medical needs of their children, visiting the home when necessary to talk to the parent about their children's problems, and escorting the children to the necessary facilities to receive the helpthey need. The most common problems with which the Health Team and the para-medics were involved were vision and dental care. When necessary, the nurse made home visits, generally when special procedures or information was to be provided to parents.

Letters were mailed at the beginning of the school year in order to notify high priority Title I elementary schools of the availability of the Health Education Program. Fourteen schools of the lowest priority were not contacted. Of those schools contacted, 33 did not respond, 11 refused services, and the remaining 38 schools were either served regularly or occasionally according to need throughout the school year. Table H-1 includes the list of schools served.

Table H-1

Schools Served by the Health Education Program

| Public | Private/Parochial |
|---|---|
| Agassiz | Berea |
| Barrett | Blessed Sacrament |
| Bigelow | Highland Park |
| Bowditch | Our Lady of Lourdes |
| Brooks | St. Francis de Sales |
| Clap | St. John |
| Dever | St. Joseph |
| Dickerman | St. Kevin |
| Ellis | St. Matthew |
| Emerson | St. Peter |
| Everett | St. William |
| Fenwick | |
| Hale | |
| Hernandez | |
| Higginson | |
| Hurley | |
| Kent | |
| Marshall | |
| Mason | |
| Mather | |
| Motley | |
| O'Reilly | |
| Prince | |
| Quincy | |
| Russell | |
| Shaw | |
| Winthrop | |

The activities of the Health Team were provided primarily by the para-medics in response to 632 referrals (69 more than those made last year). The largest proportion of activities involved services to parents in the form of visits and

conferences, and to children in the form of escort services (see Table H-2). The clinical services resulting from those escort services provided by the para-medics are described in Table H-3. This table represents the services received by the children rendered by appropriate medical or health personnel.

The Parent Training Program as proposed was not initiated. However, some parental involvement and training was accomplished by making presentations at 17 schools during workshops or meetings organized by the Community Relations Department during the school year.

Table H-2

Activities of the Health Education Program[a]

| Activity | Frequency | Percent of Total |
|---|---|---|
| Visits | | |
| School | 554 | 14 |
| Home | 797 | 21 |
| Clinic | 141 | 4 |
| Hospital | 8 | [b] |
| Other Agency | 29 | 1 |
| Conferences | | |
| School Nurse | 401 | 10 |
| Principal | 213 | 5 |
| Teacher | 123 | 3 |
| Parent | 562 | 14 |
| Other In-Home | 77 | 2 |
| Coordinator | 102 | 3 |
| Team Nurse | 124 | 3 |
| Doctor, Nurse, Other | 153 | 4 |
| Meetings | | |
| Special | 29 | 1 |
| Staff | 9 | [b] |
| In-Service Education | 37 | 1 |
| Special Field Trips | 13 | [b] |
| Escort Services | 509 | 13 |
| Total Activities | 3881 | 99 |

[a]Summarized from Health Education Program Records.

[b]Less than one percent.

Table H-3

Summary of Clinical Statistics[a]

| Clinical Service | Frequency | |
|---|---|---|
| Dental | | 423 |
| Prophylactic Cleaning | 87 | |
| Extraction | 62 | |
| X-Ray - Gun RX | 55 | |
| Orthodontic | 4 | |
| Caries Filled | 110 | |
| Other (Fluoride) | 105 | |
| Vision | | 228 |
| Examination | 121 | |
| Glasses | 45 | |
| Other (Repair of glasses) | 122 | |
| Hearing | | 74 |
| Hearing Deficiency | 36 | |
| Other (Exam., Aids) | 38 | |
| Medical | | 305 |
| Health Hx-Immunization | 172 | |
| Physical Examination | 61 | |
| Other | 72 | |
| Social | | 93 |
| Social | 42 | |
| Emotional | 16 | |
| Other | 35 | |

[a]Summarized from Health Education Program Records.

## Opinions of School and Health Education Program

### Personnel

As reported in last year's evaluation, the staff again reported friction between themselves and the school nurses and that some school nurses were unwilling to cooperate with the Health Care Team. Because the problems between school nurses and para-medics persisted this year, the evaluators sought to obtain opinions about the program from nurses in all Title I elementary schools, whether or not served by the Health Team. In addition, the Director of Nurses in the Boston Schools was interviewed. For this year's evaluation, a list was obtained from the Health Program which included all Title I schools, not only including those which were served regularly or occasionally but also those which were contacted but gave no response, those which were contacted but refused services and those with which no contact was made. Table H-4 represents the number of public, private/parochial, and magnet schools in each category.

This year questionnaires were sent to all contacted Title I schools in order to provide the opportunity for all principals and school nurses to register their opinions about the program. Despite the fact that principals and nurses were provided with the opportunity to report their opinions, 12 principals and nurses returned the questionnaires stating only that they did not have the Health Education Program in their schools. Of 82 schools receiving questionnaires, 17 administrators of Title I schools and 16 nurses responded to and returned

questionnaires. This return represents 21% of all schools contacted, and 45% of schools reported as served by the Team. In addition, 21 out of 100 parents who received questionnaires returned them.

Table H-4

Contacts with Public, Private, Parochial, and Magnet Title I Schools by the Health Team

| | Public | Private/Parochial | Magnet | Total |
|---|---|---|---|---|
| Served | 13 | 6 | 1 | 20 |
| Served Occasionally | 13 | 5 | 0 | 18 |
| Contacted/ No Response | 16 | 11 | 6 | 33 |
| Contacted/ Refused | 11 | 0 | 0 | 11 |
| No Contact | 4 | 8 | 2 | 14 |

School Nurses

Over 80% of the nurses who responded reported that they had received adequate information about the program, that the objectives of the program had been clearly explained to them, and that they understood the purpose of the program. About half of the nurses indicated that the Program was providing a service needed by the community. Importantly, only a third of the nurses felt that the Health Care Team duplicated services already provided by the school.

More than 80% of the nurses indicated that they and the para-medics worked well together, and two-thirds of the nurses indicated that there was good communication between them and the para-medics. More than half of the nurses reported that they regularly saw the para-medic assigned to their school. Two-thirds of the nurses also indicated that they were regularly informed about the progress of each referral; slightly less than half indicated that they received all necessary information regarding final disposition of each referral. Only one-third indicated that they would like to meet more frequently to discuss referrals.

Half of the nurses indicated that para-medics spent most of their time working directly with referrals; however, a surprisingly low percentage of the nurses (38%) indicated that the para-medics had been successful in obtaining health services for the referrals. Although many nurses felt that services weren't obtained by the para-medics, more than half (61%) of the nurses indicated that the para-medic provided a valuable service by escorting referrals to and from clinic appointments. Fewer nurses (38%) indicated that obtaining signed parental permission forms as part of this process was a valuable service provided by para-medics. Approximately half of the nurses indicated the Health Education Team provided a valuable service by making contact with health clinics or other agencies. In each of these preceeding assessments about the value of services rendered by the para-medics, only one nurse responded negatively; the others indicated that they were not sure.

None of the nurses reported that the para-medics were not competent to handle their responsibilities, although three (19%) indicated that they were not sure. Two-thirds of the nurses indicated that they were satisfied with the performance of the para-medic while only one nurse indicated that they were not satisfied. (The remaining nurses indicated they were not sure.)

The nurses' assessment of the services rendered by the para-medics was slightly more negative this year than that indicated in last year's final report. This change might be accounted for by the fact that included among the respondents this year are those nurses more resistant to the Health Education Program, who did not accept the services of the Health Education Program. However, despite the more negative responses, two-thirds of the nurses indicated that the program should continue.

Approximately half of the nurses indicated that the Health Education Program was well administered, and two-thirds indicated that there was an open channel of communication with the coordinator and nurse. No nurses reported problems in dealing with Health Education Program personnel.

Comments offered by the nurses were both positive and negative. Five nurses commented on the tremendous amount of help and support provided by the para-medic. The negative comments were made by three nurses who indicated that the program was a duplication of services, and one nurse who expressed very negative feelings about "how unnecessary the Health Education Program" is.

An additional three nurses responding indicated that they didn't know enough about the Health Education Program to comment.

Administrators of Title I Schools

Two-thirds of the principals understood the objectives of the program and the role of the para-medics, and reported receiving adequate information about the program. This year, the administrators are better informed about the program than last year when only 25% reported such knowledge. Most principals reported that they had met with the para-medic assigned to the school. Almost three-fourths of the administrators indicated that para-medic and nurse in their school worked well together, while 25% indicated that they did not.

Three-fourths of the principals indicated that the Health Education Program provided a service needed by the community, that the need does exist in the school for the services provided by the program, and that they would like to have the Health Education Program continued in their school. While one-fourth of the principals felt that the services of the Health Education Program were duplication of services already provided, in fact, only one-third indicated that the services could in fact be provided by the school.

Parents

The responses of the parents returning questionnaires were very positive concerning the program. Parents reported that they had learned about the

program from such sources as the para-medic, school nurse, Title I teacher, another parent, or by letter. Almost all parents indicated that the para-medic had helped in providing health services for their children. Almost all parents were happy with this service. Three-fourths of the parents indicated that they had met the para-medic, that the para-medic explained his/her work to them, and that they understood the role of the para-medic. Almost all parents reported that they were notified when their child had the first appointment with a clinic or with a doctor. Most parents reported that the para-medic escorted their child to the appointment while they could not have done this. Also, almost all parents noted that they could not have paid for this service. Only 14% of the parents indicated that their child would have been helped without the para-medic. Most parents rated the program excellent (81%) or good (14%), while only one parent rated it poor. Most parents also indicated that other families could benefit from this program.

Director of Nurses

Problems in the current Health Education Program designated by the Director of Nurses centered in three major areas: the type of services provided, the role of the providers, and the extent of the services provided.

The Director indicated that the Health Education Program should be re-structured to provide medical services directly to the children rather than to

provide escort services to the children. Presently, a small portion of the Health Education Program budget goes to direct medical services and a large portion goes to salaries of the para-medics. The Health Education Program should establish ongoing medical care for children either under the direction of a private physician or in a clinic. In this approach, according to the Director of Nurses, a variety of medical problems could be addressed instead of only vision and dental care problems.

The Director believes that para-medics should be qualified nurses who could visit homes and provide direct medical services to the children. Further, the para-medics should be assigned to the school nurse who is most familiar with the Title I children and their problems. In fact, all referrals should come from the school nurse. A main function of these para-medics would be to provide health education for the parents. Finally, it was reported that there are a number of Title I elementary schools not served by the Health Education Program; the Director feels that all Title I children should benefit from the Health Education Program. According to the Director, the middle school children are, in many cases, the most needy and yet receive no services from the Health Education Program.

A final area of concern appears to be a discrepancy between information provided by the Health Team and that provided by the Director. According to the Director, most referrals are not made through the school nurses. School

nurses are asked to approve of a student's visit to a clinic or physician, but these visits are often not initiated through the school nurse. Such a discrepancy is serious, for the role of the school nurse as a prime referral source is critical to the successful implementation of the para-medic's role.

Although last year's evaluation reports recommended improving communication with nurses by holding meetings with them, there have been no such meetings this year to familiarize nurses with the services to be offered by the Health Team. The Director of Nurses was unable to suggest ways to improve the current relationship between nurses and para-medics.

## Recommendations

Based on the findings of the evaluation reported above, the following recommendations for the Health Education Program are offered:

1. Because the relationship between nurses and para-medics remains an issue, small group meetings should be held at the beginning of the school year involving Title I administrators, the Director of Nurses, school nurses, the Coordinator of the Health Program, and para-medics. These meetings should be devoted to defining roles clearly, and improving communication and relationships among these staff members.

2. In addition to notifying Title I schools by mail, a follow-up phone call or visit to each school should be made in order to reduce the number of schools which are contacted but do not respond.

3. More active parent training should be initiated through newsletters and a series of workshops. Perhaps incorporating these workshops on such topics as dental care, vision, and nutrition into the meetings arranged by the Community Relations Department would increase the number of parents reached by the Health Education Program.

# SUMMARY

This report presented the summative evaluation of four components of Boston's ESEA Title I project funded in 1976-77. These are: the Reading and Mathematics Program at the Elementary School Level (Elementary Enrichment Program), the Reading Program at the Middle School Level, the NIE Demonstration Project, and the Health Education Program. The evaluation included a broad range and variety of data sources and several data gathering techniques. Input and process evaluation included such factors as administration and supervision, instructional environment and processes, materials and supplies, morale, parental involvement, in-service training, and the like. Product data--students' test results in reading and mathematics--were also obtained.

## Elementary Reading and Mathematics Program

The Elementary Enrichment Program has been the major component of the Title I project for many years. In 1976-77, 215 Title I reading teachers and aides staffed 97 elementary schools, including 67 public, 27 parochial, and three private schools; and 40 Title I math teachers and aides worked in 34 of the 97 schools--23 public and 11 parochial. Approximately 10,200 students were served in the Elementary Enrichment Program--8,600 in reading and 1,600 in math.

There were three basic modes of instruction: (1) the major instructional approach was an individualized system in which a teacher and aide served a total of 42 students in six 45 minute periods, five days per week; (2) the New Century Reading Lab which operated in three schools and served either 100 or 180 students

per day depending upon the size of the Lab in five 50 minute periods; and (3) the Alphabus Program which served 82 students in three schools on a part-time basis. In all modes, the focus was upon meeting the needs of the individual student utilizing a systematic instructional process.

The experience of the administrators and the staff in this Title I component contributed to a well run program with few operational problems. Particularly successful features included: administration and supervision, in-service training, the diagnostic-prescriptive instructional procedures, the use of specific performance objectives, early program initiation, student selection and evaluation, and the acceptance of the program and the value placed on it by parents, teachers and principals. Areas of concern included: communication between Title I and regular classroom teachers, morale among math teachers, community relations procedures, parental communication and involvement and paperwork.

Outcomes as measured by the Metropolitan Achievement Tests were positive both in reading and math, though less consistent in reading than in math. In grades 2, 5, and 6, the combined group of participants, on the average, exceeded the projected gain in grade equivalent score for disadvantaged students. Public school students exceeded the expected gain in grades 2, 4, and 5. Gains for public school students receiving traditional Title I instruction and those in the Reading Labs were approximately equal this year. Students in the Alphabus

program made gains comparable to or better than those in the regular Title I public schools.

The gains in mathematics were larger than those made in reading. Students, on the average, tended to gain one year or more in grade equivalent score in grades 2-6. Students in public and parochial schools made comparable gains.

Fourteen recommendations for program refinement were made. The major recommendations centered on improving communication between classroom teachers and Title I teachers, restructuring the orientation program, planning for the Community Relations Department, increasing parental involvement, and time for planning and paperwork.

Middle School Reading Program

In its second full year of operation, the Middle School Reading Program operated in 26 schools--19 public and seven parochial. Approximately 2,000 students were served by 50 teachers and aides. The principal instructional mode was an individualized system in which a teacher and an aide served a total of 40 students in five 45 minute periods, five days per week. In addition, the New Century Reading Lab operated in three schools, serving approximately 140 students per day in groups of 28.

Although the program at the middle school level is much newer than that at the elementary level, it too was able to function with few problems, due to its

good planning and administrative procedures. In addition to successful planning and administration, other factors contributing to the program's successes were: in-service training, implementation of the instructional process, the introduction of reading in the content area, teacher morale, the use of performance objectives, early program initiation, student selection and evaluation, and the value of the program to school staff and parents. Problem areas were: the need for assistance by teachers new to Title I in establishing programs for students, communication between Title I and classroom teachers, facilities, parental involvement and communication, and attendance.

Gains made by the middle school students on the Metropolitan Achievement Tests were large. In grades 6, 7, and 8, students, on the average, gained more in grade equivalent score than projected for the instructional period, exceeding the norm rate of growth of 1.0 G.E. month per month of instruction. The gains were large for all groups--public school, parochial school, and Reading Lab students--at all grade levels except for parochial students in grade 7.

Nineteen recommendations were offered which focused on refinements in: communication between Title I and classroom teachers, facilities, reading in the content area, and parental involvement.

NIE Demonstration Project

In the Fall of 1975, the Boston Public Schools initiated a special project funded by the National Institute of Education (NIE). Boston was awarded funds

to participate in a study dealing with the effects of changing the manner in which Title I funds are allocated within school districts. The 1975-76 school year was devoted to planning efforts which involved parents, school department personnel, federal and state agencies and community groups. During this year (1976-77), the instructional program was implemented. The school system supported the instructional aspects of the NIE Demonstration Project, while NIE supported the administrative and research requirements.

Thirteen teachers and aides served 546 children in grades 1-5 in nine schools--seven public and two parochial. In contrast to the prescribed Title I selection procedures based upon low-income and welfare incidence, these nine schools were selected on the basis of three new indexes of student need developed by the project. Instruction was individualized and followed the model of the Elementary Reading Program; students were served by a teacher and an aide in groups of seven in six 45 minute periods.

Despite the fact that this was the first year of implementation of the NIE Demonstration Project, it also encountered few operational problems, primarily due to the successful planning phase during the previous school year. The evaluation identified the following factors as important to the project's successful operation: administration and supervision, facilities, individualized instruction, materials, morale, orientation, establishment of local Parent Advisory Council's in each school, early program initiation, identification and evaluation of students,

and the value of the assistance provided by the program as perceived by parents, teachers, and principals. Areas of concern were: early assistance for teachers in establishing programs for students, con nunication between classroom teachers and NIE Title I teachers, communication among NIE Title I teachers, in-service training, use of performance objectives, parental communication, and attendance.

Results of the testing program revealed significant gains at each grade level. On the average, students in grades 2, 4, and 5 exceeded the gains projected for the instructional period, progressing in reading skills beyond the growth expected without Title I instruction.

Eleven recommendations were offered based upon the findings of the evaluation. These recommendations focused on: post-orientation assistance for new Title I teachers, increased communication between NIE Title I teachers and classroom teachers, increased communication among NIE teachers, additional in-service training, and use of the performance objectives.

Health Education Program

The Health Education Program in its sixth year of operation was staffed by a Coordinator, nine para-medics, a nurse and a secretary. This Health Care Team was charged with providing health services that were supplementary to those provided by school nurses. The main responsibility of the team was to

facilitate delivery of necessary health services to Title I students by contacting parents and informing them of the medical needs of their children, visiting the homes to discuss the children's problems, and escorting the children to the necessary facilities to receive the help they need.

The Health Care Team served 38 elementary schools during the school year. The activities were provided primarily by the para-medics in response to 632 referrals. The largest proportion of activities involved services to parents in the form of visits and conferences, and to children in the form of escort services. The most common problems with which the Health Care Team was involved were vision and dental care.

Problems faced by the Health Education program included lack of response from high priority schools, lack of cooperation from some school nurses, concern on the part of some officials of conflicting roles of the school nurses and Health Team, and the inability to implement a parent training program. Successes included: increased number of referrals, excellent working relationships with nurses in schools which accepted the Health Team's services, a large number and variety of services provided to parents and children, and increased clarity of the role of the Health Education Program among school personnel.

Recommendations were: to improve communications and relationships among the various health services personnel in the system, to follow-up in schools which do not respond to requests for services, and to initiate an active parent training program.

# Appendix A

## Statistical Analyses of Elementary Reading and Mathematics Scores

Tables A-G - Reading
Tables H-J - Mathematics

Table A

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Elementary Level - All Participants

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 1195 | Pre | - | - | - |
| | | Post | 37.23 | 9.14 | |
| Reading | 1171 | Pre | - | - | - |
| | | Post | 34.73 | 8.81 | |
| Total Reading | 1167 | Pre | - | - | - |
| | | Post | 35.41 | 7.82 | |
| | | | Grade 2 | | |
| Word Knowledge | 1212 | Pre | 41.77 | 8.04 | 47.01*** |
| | | Post | 51.67 | 7.66 | |
| Reading | 1179 | Pre | 37.89 | 7.88 | 41.52*** |
| | | Post | 48.48 | 8.76 | |
| Total Reading | 1168 | Pre | 39.36 | 14.52 | 23.74*** |
| | | Post | 49.12 | 7.06 | |

Table A (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 1191 | Pre | 52.21 | 7.57 | 21.42*** |
| | | Post | 56.15 | 7.85 | |
| Reading | 1135 | Pre | 49.37 | 9.06 | 18.88*** |
| | | Post | 54.42 | 9.03 | |
| Total Reading | 1131 | Pre | 49.99 | 7.37 | 23.29*** |
| | | Post | 54.28 | 7.70 | |
| | | | Grade 4 | | |
| Word Knowledge | 1287 | Pre | 54.46 | 7.75 | 25.91*** |
| | | Post | 62.84 | 7.99 | |
| Reading | 1285 | Pre | 55.16 | 9.49 | 23.04*** |
| | | Post | 61.31 | 9.48 | |
| Total Reading | 1278 | Pre | 55.79 | 8.02 | 31.00*** |
| | | Post | 60.96 | 7.89 | |

Table A (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 1388 | Pre | 62.98 | 8.60 | 24.21*** |
| | | Post | 68.24 | 8.41 | |
| Reading | 1386 | Pre | 59.97 | 11.08 | 23.74*** |
| | | Post | 67.54 | 10.37 | |
| Total Reading | 1376 | Pre | 60.56 | 9.70 | 27.05*** |
| | | Post | 67.21 | 9.29 | |
| | | | Grade 6 | | |
| Word Knowledge | 198 | Pre | 71.58 | 8.41 | 5.92*** |
| | | Post | 74.44 | 9.28 | |
| Reading | 193 | Pre | 68.36 | 12.18 | 8.30*** |
| | | Post | 74.83 | 10.98 | |
| Total Reading | 190 | Pre | 69.95 | 9.47 | 10.88*** |
| | | Post | 74.97 | 9.67 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table B

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Public Elementary Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 757 | Pre | - | - | - |
| | | Post | 36.32 | 8.98 | |
| Reading | 753 | Pre | - | - | - |
| | | Post | 34.08 | 9.25 | |
| Total Reading | 751 | Pre | - | - | - |
| | | Post | 34.64 | 7.53 | |
| | | | Grade 2 | | |
| Word Knowledge | 775 | Pre | 40.92 | 8.11 | 38.85*** |
| | | Post | 51.24 | 7.68 | |
| Reading | 749 | Pre | 36.73 | 7.57 | 34.20*** |
| | | Post | 47.75 | 8.89 | |
| Total Reading | 748 | Pre | 37.95 | 6.31 | 45.87*** |
| | | Post | 48.54 | 7.11 | |

Table B (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 741 | Pre | 51.04 | 7.07 | 16.84*** |
| | | Post | 55.11 | 7.40 | |
| Reading | 684 | Pre | 48.20 | 8.83 | 16.61*** |
| | | Post | 53.92 | 8.69 | |
| Total Reading | 682 | Pre | 48.91 | 6.92 | 18.62*** |
| | | Post | 53.45 | 7.28 | |
| | | | Grade 4 | | |
| Word Knowledge | 846 | Pre | 57.69 | 7.96 | 21.89*** |
| | | Post | 62.49 | 8.31 | |
| Reading | 843 | Post | 54.29 | 9.58 | 19.44*** |
| | | Post | 60.73 | 9.66 | |
| Total Reading | 840 | Pre | 54.98 | 8.25 | 26.22*** |
| | | Post | 60.52 | 8.12 | |

Table B (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 950 | Pre | 61.84 | 8.44 | 20.00*** |
| | | Post | 67.37 | 8.47 | |
| Reading | 949 | Pre | 58.67 | 11.01 | 20.21*** |
| | | Post | 66.60 | 10.18 | |
| Total Reading | 942 | Pre | 59.25 | 9.60 | 21.66*** |
| | | Post | 66.20 | 9.44 | |

*p < .01, Statistically Significant
**p < .05, Statistically Significant
***p < .001, Statistically Significant

Table C

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Parochial Elementary Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 316 | Pre | - | - | - |
| | | Post | 39.03 | 9.11 | |
| Reading | 302 | Pre | - | - | - |
| | | Post | 35.98 | 8.71 | |
| Total Reading | 299 | Pre | - | - | - |
| | | Post | 36.95 | 7.73 | |
| | | | Grade 2 | | |
| Word Knowledge | 299 | Pre | 43.53 | 8.04 | 22.46*** |
| | | Post | 52.29 | 7.50 | |
| Reading | 296 | Pre | 40.30 | 8.25 | 19.36*** |
| | | Post | 50.04 | 8.28 | |
| Total Reading | 288 | Pre | 42.79 | 26.88 | 4.79*** |
| | | Post | 50.11 | 6.76 | |

Table C (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 282 | Pre | 55.04 | 7.67 | 9.96*** |
| | | Post | 58.55 | 8.12 | |
| Reading | 282 | Pre | 52.72 | 9.17 | 6.05*** |
| | | Post | 55.78 | 8.88 | |
| Total Reading | 282 | Pre | 52.84 | 7.63 | 9.16*** |
| | | Post | 56.19 | 7.88 | |
| | | | Grade 4 | | |
| Word Knowledge | 248 | Pre | 61.40 | 7.08 | 9.19*** |
| | | Post | 64.69 | 7.58 | |
| Reading | 250 | Pre | 58.62 | 8.89 | 8.06*** |
| | | Post | 63.25 | 9.09 | |
| Total Reading | 246 | Pre | 58.89 | 7.31 | 10.63*** |
| | | Post | 62.89 | 7.90 | |

Table C (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 264 | Pre | 67.55 | 8.05 | 10.99*** |
| | | Post | 71.81 | 7.54 | |
| Reading | 265 | Pre | 64.99 | 10.20 | 8.47*** |
| | | Post | 70.41 | 10.58 | |
| Total Reading | 264 | Pre | 65.76 | 8.65 | 13.35*** |
| | | Post | 71.11 | 8.13 | |
| | | | Grade 6 | | |
| Word Knowledge | 189 | Pre | 71.69 | 8.20 | 6.96*** |
| | | Post | 74.91 | 9.17 | |
| Reading | 184 | Pre | 68.90 | 11.65 | 8.18*** |
| | | Post | 75.39 | 10.83 | |
| Total Reading | 184 | Pre | 70.49 | 9.04 | 10.47*** |
| | | Post | 75.44 | 9.40 | |

*p < .01, Statistically Significant
**p < .05, Statistically Significant
***p < .001, Statistically Significant

Table D

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Private Elementary Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 21 | Pre | - | - | - |
| | | Post | 33.05 | 5.04 | |
| Reading | 18 | Pre | - | - | - |
| | | Post | 25.67 | 3.48 | |
| Total Reading | 18 | Pre | - | - | - |
| | | Post | 29.72 | 3.88 | |
| | | | Grade 2 | | |
| Word Knowledge | 19 | Pre | 40.11 | 4.01 | 3.25** |
| | | Post | 49.53 | 12.78 | |
| Reading | 18 | Pre | 35.00 | 6.66 | 3.63** |
| | | Post | 44.28 | 9.25 | |
| Total Reading | 17 | Pre | 37.41 | 4.17 | 4.23*** |
| | | Post | 47.18 | 9.30 | |

Table D (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 13 | Pre | 45.23 | 11.02 | 1.82 |
| | | Post | 49.38 | 9.67 | |
| Reading | 13 | Pre | 44.69 | 9.37 | 0.58 |
| | | Post | 45.92 | 11.57 | |
| Total Reading | 13 | Pre | 44.23 | 9.13 | 0.63 |
| | | Post | 45.46 | 11.97 | |
| | | | Grade 4 | | |
| Word Knowledge | 19 | Pre | 54.47 | 5.99 | 2.45* |
| | | Post | 57.53 | 6.26 | |
| Reading | 19 | Pre | 50.84 | 8.87 | 2.41* |
| | | Post | 58.63 | 12.45 | |
| Total Reading | 19 | Pre | 51.68 | 5.87 | 3.49** |
| | | Post | 55.63 | 5.37 | |

Table D (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 12 | Pre | 61.00 | 7.11 | 0.39 |
| | | Post | 61.75 | 6.02 | |
| Reading | 12 | Pre | 62.17 | 11.70 | 1.29 |
| | | Post | 57.42 | 8.90 | |
| Total Reading | 10 | Pre | 58.40 | 8.57 | 0.78 |
| | | Post | 59.70 | 5.54 | |
| | | | Grade 6 | | |
| Word Knowledge | 9 | Pre | 69.22 | 12.36 | 1.20 |
| | | Post | 64.67 | 5.83 | |
| Reading | 9 | Pre | 57.22 | 16.77 | 1.41 |
| | | Post | 63.33 | 7.62 | |
| Total Reading | 6 | Pre | 53.50 | 8.22 | 4.37** |
| | | Post | 60.67 | 6.68 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table E

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Elementary NCEC Program Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 18 | Pre | - | - | - |
| | | Post | 47.00 | 6.73 | |
| Reading | 18 | Pre | - | - | - |
| | | Post | 47.28 | 9.96 | |
| Total Reading | 18 | Pre | - | - | - |
| | | Post | 45.94 | 7.31 | |
| | | | Grade 2 | | |
| Word Knowledge | 33 | Pre | 45.45 | 8.61 | 7.86*** |
| | | Post | 54.18 | 5.24 | |
| Reading | 32 | Pre | 41.66 | 8.04 | 6.64*** |
| | | Post | 51.28 | 8.05 | |
| Total Reading | 32 | Pre | 41.91 | 6.15 | 11.76*** |
| | | Post | 51.72 | 5.32 | |

Table E (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 59 | Pre | 55.75 | 9.43 | 4.47*** |
| | | Post | 59.17 | 9.17 | |
| Reading | 61 | Pre | 51.39 | 8.56 | 4.61*** |
| | | Post | 56.85 | 11.09 | |
| Total Reading | 59 | Pre | 52.51 | 7.85 | 7.59*** |
| | | Post | 57.27 | 9.05 | |
| | | | Grade 4 | | |
| Word Knowledge | 60 | Pre | 60.92 | 6.56 | 5.80*** |
| | | Post | 64.57 | 6.16 | |
| Reading | 60 | Pre | 57.43 | 8.58 | 4.55*** |
| | | Post | 63.52 | 10.65 | |
| Total Reading | 60 | Pre | 58.20 | 6.97 | 6.71*** |
| | | Post | 63.17 | 6.99 | |

Table E (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 58 | Pre | 63.74 | 8.01 | 5.43*** |
| | | Post | 68.72 | 7.89 | |
| Reading | 57 | Pre | 61.95 | 10.25 | 6.54*** |
| | | Post | 71.40 | 10.50 | |
| Total Reading | 57 | Pre | 62.11 | 8.77 | 6.42*** |
| | | Post | 68.98 | 9.68 | |

*p < .01, Statistically Significant
**p < .05, Statistically Significant
***p < .001, Statistically Significant

Table F

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Elementary Alphabus Program Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 3 | Pre | - | - | - |
| | | Post | 42.33 | 0.58 | |
| Reading | 3 | Pre | - | - | - |
| | | Post | 40.33 | 3.06 | |
| Total Reading | 3 | Pre | - | - | - |
| | | Post | 41.33 | 2.08 | |
| | | | Grade 2 | | |
| Word Knowledge | 11 | Pre | 44.82 | 4.96 | 6.23*** |
| | | Post | 54.64 | 7.78 | |
| Reading | 11 | Pre | 42.27 | 6.97 | 5.11*** |
| | | Post | 52.27 | 5.61 | |
| Total Reading | 11 | Pre | 42.64 | 5.39 | 8.98*** |
| | | Post | 52.27 | 5.39 | |

Table F (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 19 | Pre | 51.89 | 4.98 | 5.57*** |
| | | Post | 58.79 | 6.52 | |
| Reading | 19 | Pre | 44.47 | 5.38 | 7.14*** |
| | | Post | 57.05 | 8.25 | |
| Total Reading | 19 | Pre | 47.68 | 4.39 | 8.75*** |
| | | Post | 56.68 | 5.97 | |
| | | | Grade 4 | | |
| Word Knowledge | 18 | Pre | 56.94 | 4.75 | 2.88** |
| | | Post | 59.72 | 5.38 | |
| Reading | 18 | Pre | 55.06 | 6.10 | 3.09** |
| | | Post | 61.06 | 8.88 | |
| Total Reading | 18 | Pre | 55.06 | 3.95 | 3.54** |
| | | Post | 59.00 | 6.18 | |

Table F (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 10 | Pre | 61.00 | 7.44 | 2.89* |
| | | Post | 67.40 | 5.08 | |
| Reading | 10 | Pre | 57.30 | 10.16 | 3.11* |
| | | Post | 66.50 | 9.49 | |
| Total Reading | 10 | Pre | 57.70 | 9.37 | 3.40** |
| | | Post | 65.90 | 5.78 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table G

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
NIE Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 1 | | |
| Word Knowledge | 79 | Pre | - | - | - |
| | | Post | 37.48 | 9.73 | |
| Reading | 78 | Pre | - | - | - |
| | | Post | 35.17 | 8.79 | |
| Total Reading | 78 | Pre | - | - | - |
| | | Post | 35.56 | 8.85 | |
| | | | Grade 2 | | |
| Word Knowledge | 75 | Pre | 41.96 | 6.45 | 12.41*** |
| | | Post | 52.56 | 6.86 | |
| Reading | 73 | Pre | 38.40 | 6.77 | 10.59*** |
| | | Post | 48.95 | 8.73 | |
| Total Reading | 72 | Pre | 39.07 | 5.21 | 14.92*** |
| | | Post | 50.04 | 7.19 | |

Table G (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 3 | | |
| Word Knowledge | 77 | Pre | 51.71 | 6.18 | 5.98*** |
| | | Post | 55.57 | 7.08 | |
| Reading | 76 | Pre | 47.83 | 8.15 | 4.42*** |
| | | Post | 52.74 | 9.07 | |
| Total Reading | 76 | Pre | 48.80 | 6.59 | 7.63*** |
| | | Post | 53.30 | 6.49 | |
| | | | Grade 4 | | |
| Word Knowledge | 96 | Pre | 57.16 | 6.74 | 8.93*** |
| | | Post | 61.73 | 6.58 | |
| Reading | 95 | Pre | 53.27 | 8.95 | 8.14*** |
| | | Post | 60.58 | 6.27 | |
| Total Reading | 95 | Pre | 54.36 | 6.79 | 11.20*** |
| | | Post | 59.98 | 5.43 | |

Table G (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 5 | | |
| Word Knowledge | 94 | Pre | 61.71 | 8.27 | 6.60*** |
| | | Post | 67.67 | 8.23 | |
| Reading | 93 | Pre | 57.16 | 10.53 | 7.86*** |
| | | Post | 68.01 | 9.36 | |
| Total Reading | 93 | Pre | 58.71 | 9.20 | 8.63*** |
| | | Post | 66.30 | 7.97 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table H

Summary of Analysis of Mathematics Subtests
California Achievement Tests
Elementary Level - All Participants

| Grade | Subtest | N | t | p < |
|---|---|---|---|---|
| 2 | Computation | 211 | 21.03 | .001 |
| 2 | Concepts | 213 | 22.59 | .001 |
| 2 | Total Math | 210 | 26.76 | .001 |
| 3 | Computation | 262 | 27.38 | .001 |
| 3 | Concepts | 263 | 18.02 | .001 |
| 3 | Total Math | 260 | 30.51 | .001 |
| 4 | Computation | 269 | 19.83 | .001 |
| 4 | Concepts | 268 | 18.08 | .001 |
| 4 | Total Math | 269 | 26.22 | .001 |
| 5 | Computation | 231 | 14.42 | .001 |
| 5 | Concepts | 233 | 13.31 | .001 |
| 5 | Total Math | 230 | 16.24 | .001 |
| 6 | Computation | 57 | 6.68 | .001 |
| 6 | Concepts | 57 | 6.33 | .001 |
| 6 | Total Math | 57 | 8.00 | .001 |

Note. - Correlated t-tests calculated using Achievement Development Scale Scores (Standard Scores) by test publisher.

Table I

Summary of Analysis of Mathematics Subtests
California Achievement Tests
Public Elementary Schools

| Grade | Subtest | N | t | p< |
|---|---|---|---|---|
| 2 | Computation | 150 | 18.36 | .001 |
| 2 | Concepts | 152 | 18.31 | .001 |
| 2 | Total Math | 149 | 22.47 | .001 |
| 3 | Computation | 192 | 21.91 | .001 |
| 3 | Concepts | 194 | 14.65 | .001 |
| 3 | Total Math | 191 | 24.89 | .001 |
| 4 | Computation | 203 | 17.75 | .001 |
| 4 | Concepts | 203 | 15.20 | .001 |
| 4 | Total Math | 203 | 22.66 | .001 |
| 5 | Computation | 177 | 12.84 | .001 |
| 5 | Concepts | 179 | 11.56 | .001 |
| 5 | Total Math | 176 | 14.52 | .001 |

Note. - Correlated t-tests calculated using Achievement Development Scale Scores (Standard Scores) by test publisher.

Table J

Summary of Analysis of Mathematics Subtests
California Achievement Tests
Parochial Elementary Schools

| Grade | Subtest | N | t | p < |
|---|---|---|---|---|
| 2 | Computation | 62 | 10.70 | .001 |
| 2 | Concepts | 62 | 14.10 | .001 |
| 2 | Total Math | 62 | 15.27 | .001 |
| 3 | Computation | 70 | 17.62 | .001 |
| 3 | Concepts | 71 | 10.75 | .001 |
| 3 | Total Math | 70 | 18.12 | .001 |
| 4 | Computation | 66 | 8.90 | .001 |
| 4 | Concepts | 65 | 11.27 | .001 |
| 4 | Total Math | 66 | 13.35 | .001 |
| 5 | Computation | 54 | 6.60 | .001 |
| 5 | Concepts | 54 | 7.22 | .001 |
| 5 | Total Math | 54 | 7.53 | .001 |
| 6 | Computation | 57 | 6.68 | .001 |
| 6 | Concepts | 57 | 6.33 | .001 |
| 6 | Total Math | 57 | 8.00 | .001 |

Note. - Correlated t-tests calculated using Achievement Development Scale Scores (Standard Scores) by test publisher.

## Appendix B

## Grade Equivalent Scores in Reading by Subtest for Seven Elementary Program Groups

Table A

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Elementary Level - All Participants

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.9 | 2.5 | 0.6 | 0.9 |
| 3 | 2.5 | 2.9 | 0.4 | 0.6 |
| 4 | 2.7 | 3.6 | 0.9 | 1.3 |
| 5 | 3.6 | 4.2 | 0.6 | 0.9 |
| 6 | 4.8 | 5.2 | 0.4 | 0.6 |
| | | Reading | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.7 | 2.3 | 0.6 | 0.9 |
| 3 | 2.3 | 2.7 | 0.4 | 0.6 |
| 4 | 2.8 | 3.4 | 0.6 | 0.9 |
| 5 | 3.3 | 4.2 | 0.9 | 1.3 |
| 6 | 4.2 | 5.1 | 0.9 | 1.3 |
| | | Total Reading | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.8 | 2.4 | 0.6 | 0.9 |
| 3 | 2.5 | 2.8 | 0.3 | 0.4 |
| 4 | 3.0 | 3.5 | 0.5 | 0.7 |
| 5 | 3.5 | 4.2 | 0.7 | 1.0 |
| 6 | 4.5 | 5.2 | 0.7 | 1.0 |

Table B

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Public Elementary Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.9 | 2.5 | 0.6 | 0.9 |
| 3 | 2.5 | 2.8 | 0.3 | 0.4 |
| 4 | 3.1 | 3.5 | 0.4 | 0.6 |
| 5 | 3.5 | 4.1 | 0.6 | 0.9 |
| | | Reading | | |
| 1 | - | 1.5 | - | - |
| 2 | 1.6 | 2.3 | 0.7 | 1.0 |
| 3 | 2.3 | 2.7 | 0.4 | 0.6 |
| 4 | 2.7 | 3.4 | 0.7 | 1.0 |
| 5 | 3.2 | 4.1 | 0.9 | 1.3 |
| | | Total Reading | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.8 | 2.4 | 0.6 | 0.9 |
| 3 | 2.4 | 2.7 | 0.3 | 0.4 |
| 4 | 2.9 | 3.5 | 0.6 | 0.9 |
| 5 | 3.3 | 4.1 | 0.8 | 1.1 |

Table C

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Parochial Elementary Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.8 | - | - |
| 2 | 2.0 | 2.5 | 0.5 | 0.7 |
| 3 | 2.8 | 3.2 | 0.4 | 0.6 |
| 4 | 3.4 | 3.8 | 0.4 | 0.6 |
| 5 | 4.2 | 4.8 | 0.6 | 0.9 |
| 6 | 4.8 | 5.3 | 0.5 | 0.7 |
| | | Reading | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.8 | 2.4 | 0.6 | 0.9 |
| 3 | 2.7 | 2.9 | 0.2 | 0.3 |
| 4 | 3.2 | 3.6 | 0.4 | 0.6 |
| 5 | 3.8 | 4.4 | 0.6 | 0.9 |
| 6 | 4.3 | 5.1 | 0.8 | 1.1 |
| | | Total Reading | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.9 | 2.5 | 0.6 | 0.9 |
| 3 | 2.7 | 3.0 | 0.3 | 0.4 |
| 4 | 3.3 | 3.7 | 0.4 | 0.6 |
| 5 | 4.1 | 4.6 | 0.5 | 0.7 |
| 6 | 4.5 | 5.2 | 0.7 | 1.0 |

Table D

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Private Elementary Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.5 | - | - |
| 2 | 1.8 | 2.4 | 0.6 | 0.9 |
| 3 | 2.0 | 2.3 | 0.3 | 0.4 |
| 4 | 2.7 | 3.1 | 0.4 | 0.6 |
| 5 | 3.4 | 3.5 | 0.1 | 0.1 |
| 6 | 4.4 | 3.8 | -0.6 | - |
| | | Reading | | |
| 1 | - | 1.3 | - | - |
| 2 | 1.6 | 2.0 | 0.4 | 0.6 |
| 3 | 2.2 | 2.1 | -0.1 | - |
| 4 | 2.5 | 3.2 | 0.7 | 1.0 |
| 5 | 3.5 | 3.0 | -0.5 | - |
| 6 | 3.0 | 3.6 | 0.6 | 0.9 |
| | | Total Reading | | |
| 1 | - | 1.5 | - | - |
| 2 | 1.6 | 2.3 | 0.7 | 1.0 |
| 3 | 2.0 | 2.1 | 0.1 | 0.1 |
| 4 | 2.6 | 3.0 | 0.4 | 0.6 |
| 5 | 3.2 | 3.4 | 0.2 | 0.3 |
| 6 | 2.8 | 3.5 | 0.7 | 1.0 |

Table E

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Elementary NCEC Program Schools

| Grade | Pretest G.E. Mean | Posttest G.E. Mean | Mean G.E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 2.2 | - | - |
| 2 | 2.0 | 2.7 | 0.7 | 1.0 |
| 3 | 2.9 | 3.2 | 0.3 | 0.4 |
| 4 | 3.4 | 3.8 | 0.4 | 0.6 |
| 5 | 3.7 | 4.4 | 0.7 | 1.0 |
| | | Reading | | |
| 1 | - | 2.2 | - | - |
| 2 | 1.9 | 2.5 | 0.6 | 0.9 |
| 3 | 2.5 | 3.0 | 0.5 | 0.7 |
| 4 | 3.0 | 3.7 | 0.7 | 1.0 |
| 5 | 3.5 | 4.5 | 1.0 | 1.4 |
| | | Total Reading | | |
| 1 | - | 2.2 | - | - |
| 2 | 2.0 | 2.6 | 0.6 | 0.9 |
| 3 | 2.7 | 3.1 | 0.4 | 0.6 |
| 4 | 3.2 | 3.7 | 0.5 | 0.7 |
| 5 | 3.6 | 4.4 | 0.8 | 1.1 |

Table F

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Elementary Alphabus Program Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.9 | - | - |
| 2 | 2.0 | 2.8 | 0.8 | 1.1 |
| 3 | 2.5 | 3.2 | 0.7 | 1.0 |
| 4 | 3.0 | 3.3 | 0.3 | 0.4 |
| 5 | 3.4 | 4.1 | 0.7 | 1.0 |
| | | Reading | | |
| 1 | - | 1.8 | - | - |
| 2 | 1.9 | 2.6 | 0.7 | 1.0 |
| 3 | 2.0 | 3.0 | 1.0 | 1.4 |
| 4 | 2.8 | 3.4 | 0.6 | 0.9 |
| 5 | 3.0 | 4.1 | 1.1 | 1.6 |
| | | Total Reading | | |
| 1 | - | 1.9 | - | - |
| 2 | 2.0 | 2.6 | 0.6 | 0.9 |
| 3 | 2.3 | 3.1 | 0.8 | 1.1 |
| 4 | 2.9 | 3.3 | 0.4 | 0.6 |
| 5 | 3.2 | 4.1 | 0.9 | 1.3 |

Table G

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, NIE Program

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.9 | 2.6 | 0.7 | 1.0 |
| 3 | 2.5 | 2.9 | 0.4 | 0.6 |
| 4 | 3.0 | 3.5 | 0.5 | 0.7 |
| 5 | 3.5 | 4.2 | 0.7 | 1.0 |
| | | Reading | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.7 | 2.3 | 0.6 | 0.9 |
| 3 | 2.3 | 2.7 | 0.4 | 0.6 |
| 4 | 2.7 | 3.4 | 0.7 | 1.0 |
| 5 | 3.1 | 4.2 | 1.1 | 1.6 |
| | | Total Reading | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.7 | 2.5 | 0.8 | 1.1 |
| 3 | 2.4 | 2.7 | 0.3 | 0.4 |
| 4 | 2.8 | 3.4 | 0.6 | 0.9 |
| 5 | 3.3 | 4.1 | 0.8 | 1.1 |

# Appendix C

## Grade Equivalent Scores in Mathematics by Subtest for Public, Parochial and All Schools Combined

Table A

Summary of Pre and Post Mean Grade Equivalent Gains on the Mathematics Subtests of the California Achievement Tests, All Participants

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Computation | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.7 | 2.8 | 1.1 | 1.6 |
| 3 | 2.3 | 3.5 | 1.2 | 1.7 |
| 4 | 3.4 | 4.4 | 1.0 | 1.4 |
| 5 | 4.0 | 4.9 | 0.9 | 1.3 |
| 6 | 5.2 | 6.0 | 0.8 | 1.1 |
| | | Concepts | | |
| 1 | - | 1.5 | - | - |
| 2 | 1.5 | 2.5 | 1.0 | 1.4 |
| 3 | 2.3 | 3.1 | 0.8 | 1.1 |
| 4 | 3.0 | 4.0 | 1.0 | 1.4 |
| 5 | 3.4 | 4.6 | 1.2 | 1.7 |
| 6 | 5.4 | 6.5 | 1.1 | 1.6 |
| | | Total Math | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.6 | 2.7 | 1.1 | 1.6 |
| 3 | 2.3 | 3.4 | 1.1 | 1.6 |
| 4 | 3.3 | 4.3 | 1.0 | 1.4 |
| 5 | 3.8 | 4.8 | 1.0 | 1.4 |
| 6 | 5.2 | 6.1 | 0.9 | 1.3 |

Table B

Summary of Pre and Post Mean Grade Equivalent Gains on the Mathematics Subtests of the California Achievement Tests, Public Elementary Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Computation | | |
| 1 | - | 1.8 | - | - |
| 2 | 1.5 | 2.7 | 1.2 | 1.7 |
| 3 | 2.2 | 3.4 | 1.2 | 1.7 |
| 4 | 3.3 | 4.4 | 1.1 | 1.6 |
| 5 | 3.7 | 4.8 | 1.1 | 1.6 |
| | | Concepts | | |
| 1 | - | 1.4 | - | - |
| 2 | 1.3 | 2.5 | 1.2 | 1.7 |
| 3 | 2.2 | 3.0 | 0.8 | 1.1 |
| 4 | 2.9 | 3.9 | 1.0 | 1.4 |
| 5 | 3.3 | 4.3 | 1.0 | 1.4 |
| | | Total Math | | |
| 1 | - | 1.6 | - | - |
| 2 | 1.5 | 2.6 | 1.1 | 1.6 |
| 3 | 2.2 | 3.3 | 1.1 | 1.6 |
| 4 | 3.2 | 4.2 | 1.0 | 1.4 |
| 5 | 3.6 | 4.6 | 1.0 | 1.4 |

Table C

Summary of Pre and Post Mean Grade Equivalent Gains on the Mathematics Subtests of the California Achievement Tests, Parochial Elementary Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Computation | | |
| 1 | - | 1.7 | - | - |
| 2 | 2.0 | 2.8 | 0.8 | 1.1 |
| 3 | 2.5 | 3.7 | 1.2 | 1.7 |
| 4 | 3.6 | 4.5 | 0.9 | 1.3 |
| 5 | 4.8 | 5.5 | 0.7 | 1.0 |
| 6 | 5.2 | 6.0 | 0.8 | 1.1 |
| | | Concepts | | |
| 1 | - | 1.8 | - | - |
| 2 | 1.8 | 2.8 | 1.0 | 1.4 |
| 3 | 2.5 | 3.4 | 0.9 | 1.3 |
| 4 | 3.4 | 4.4 | 1.0 | 1.4 |
| 5 | 4.2 | 5.1 | 0.9 | 1.3 |
| 6 | 5.4 | 6.5 | 1.1 | 1.6 |
| | | Total Math | | |
| 1 | - | 1.7 | - | - |
| 2 | 1.9 | 2.8 | 0.9 | 1.3 |
| 3 | 2.5 | 3.6 | 1.1 | 1.6 |
| 4 | 3.5 | 4.5 | 1.0 | 1.4 |
| 5 | 4.6 | 5.3 | 0.7 | 1.0 |
| 6 | 5.2 | 6.1 | 0.9 | 1.3 |

## Appendix D

## Percentile and NCE Scores in Reading and Math by Subtest for Seven Elementary Program Groups

Table A

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
All Participants - Grades 1-6

| | | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| Subtest | Grade | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 38 | - | - | 43.6 | - |
| | 2 | 36 | 38 | 2 | 42.5 | 43.6 | 1.1 |
| | 3 | 28 | 26 | -2 | 37.7 | 36.5 | -1.2 |
| | 4 | 16 | 24 | 8 | 19.1 | 35.1 | 6.0 |
| | 5 | 18 | 20 | 2 | 30.7 | 32.3 | 1.6 |
| | 6 | 28 | 22 | -6 | 37.7 | 33.7 | -4.0 |
| Reading | 1 | - | 34 | - | - | 41.3 | - |
| | 2 | 24 | 28 | 4 | 35.1 | 37.7 | 2.6 |
| | 3 | 18 | 28 | 10 | 30.7 | 37.7 | 7.0 |
| | 4 | 20 | 26 | 6 | 32.2 | 36.5 | 4.2 |
| | 5 | 16 | 20 | 4 | 29.1 | 32.3 | 3.2 |
| | 6 | 20 | 24 | 4 | 32.3 | 35.1 | 2.8 |
| Total Reading | 1 | - | 32 | - | - | 40.1 | - |
| | 2 | 26 | 34 | 8 | 36.5 | 41.3 | 4.8 |
| | 3 | 24 | 28 | 4 | 35.1 | 37.7 | 2.6 |
| | 4 | 24 | 24 | 0 | 35.1 | 35.1 | 0.0 |
| | 5 | 18 | 18 | 0 | 30.7 | 30.7 | 0.0 |
| | 6 | 22 | 23 | 1 | 33.7 | 34.4 | 0.7 |

Table B

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Public Elementary Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 36 | - | - | 42.5 | - |
| | 2 | 32 | 32 | 0 | 40.1 | 40.1 | 0.0 |
| | 3 | 24 | 24 | 0 | 35.1 | 35.1 | 0.0 |
| | 4 | 24 | 22 | -2 | 35.1 | 33.7 | -1.4 |
| | 5 | 16 | 18 | 2 | 29.1 | 30.7 | 1.6 |
| Reading | 1 | - | 30 | - | - | 39.0 | - |
| | 2 | 22 | 28 | 6 | 33.7 | 37.7 | 4.0 |
| | 3 | 16 | 28 | 12 | 29.1 | 37.7 | 8.6 |
| | 4 | 20 | 26 | 6 | 32.3 | 36.5 | 4.2 |
| | 5 | 16 | 18 | 2 | 29.1 | 30.7 | 1.6 |
| Total Reading | 1 | - | 32 | - | - | 40.1 | - |
| | 2 | 24 | 34 | 10 | 35.1 | 41.3 | 6.2 |
| | 3 | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| | 4 | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| | 5 | 14 | 18 | 4 | 27.2 | 30.7 | 3.5 |

Table C

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Parochial Elementary Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 44 | - | - | 46.8 | - |
| | 2 | 44 | 38 | -6 | 46.8 | 43.6 | -3.2 |
| | 3 | 38 | 36 | -2 | 43.6 | 42.5 | -1.1 |
| | 4 | 32 | 30 | -2 | 40.1 | 39.0 | -1.1 |
| | 5 | 32 | 34 | 2 | 40.1 | 41.3 | 1.2 |
| | 6 | 28 | 26 | -2 | 37.7 | 36.5 | 1.2 |
| Reading | 1 | - | 36 | - | - | 42.5 | - |
| | 2 | 30 | 36 | -6 | 39.0 | 42.5 | 3.5 |
| | 3 | 30 | 34 | 4 | 39.0 | 41.3 | 2.3 |
| | 4 | 28 | 30 | 2 | 37.7 | 39.0 | 1.3 |
| | 5 | 26 | 24 | -2 | 36.5 | 35.1 | -1.4 |
| | 6 | 20 | 24 | 4 | 32.3 | 35.1 | 2.8 |
| Total Reading | 1 | - | 40 | - | - | 44.7 | - |
| | 2 | 42 | 38 | -4 | 45.8 | 43.6 | -2.2 |
| | 3 | 36 | 34 | -2 | 42.5 | 41.3 | -1.2 |
| | 4 | 32 | 30 | -2 | 40.1 | 39.0 | -1.1 |
| | 5 | 28 | 28 | 0 | 37.7 | 37.7 | 0.0 |
| | 6 | 22 | 23 | 1 | 33.7 | 34.4 | 0.7 |

Table D

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Private Elementary Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 26 | - | - | 36.5 | - |
| | 2 | 28 | 26 | -2 | 37.7 | 36.5 | -1.2 |
| | 3 | 10 | 11 | 1 | 23.0 | 24.2 | 1.2 |
| | 4 | 16 | 14 | -2 | 29.1 | 27.2 | -1.9 |
| | 5 | 16 | 10 | -6 | 29.1 | 23.0 | -6.1 |
| | 6 | 20 | 8 | -12 | 32.3 | 20.4 | -11.9 |
| Reading | 1 | - | 8 | - | - | 20.4 | - |
| | 2 | 18 | 20 | 2 | 30.7 | 32.3 | 1.6 |
| | 3 | 20 | 10 | -10 | 32.3 | 23.0 | -12.3 |
| | 4 | 14 | 20 | 6 | 27.2 | 32.3 | 5.1 |
| | 5 | 20 | 8 | -12 | 32.3 | 20.4 | -11.9 |
| | 6 | 8 | 6 | -2 | 20.4 | 17.3 | -3.1 |
| Total Reading | 1 | - | 20 | - | - | 32.3 | - |
| | 2 | 20 | 23 | 3 | 32.3 | 34.4 | 2.1 |
| | 3 | 10 | 8 | -2 | 23.0 | 20.4 | -2.6 |
| | 4 | 16 | 14 | -2 | 29.1 | 27.2 | -1.9 |
| | 5 | 12 | 8 | -4 | 25.3 | 20.4 | -4.9 |
| | 6 | 2 | 6 | 4 | 6.7 | 17.3 | 10.7 |

Table E

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Elementary NCEC Program Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 74 | - | - | 63.5 | - |
| | 2 | 48 | 50 | 2 | 48.9 | 50.0 | 1.1 |
| | 3 | 42 | 36 | -6 | 45.8 | 42.5 | -3.3 |
| | 4 | 32 | 42 | 10 | 40.1 | 45.8 | 5.7 |
| | 5 | 20 | 24 | 4 | 32.3 | 35.1 | 2.8 |
| Reading | 1 | - | 82 | - | - | 69.3 | - |
| | 2 | 38 | 40 | 2 | 43.6 | 44.7 | 1.1 |
| | 3 | 24 | 38 | 14 | 35.1 | 43.6 | 8.5 |
| | 4 | 26 | 44 | 18 | 36.5 | 46.8 | 10.3 |
| | 5 | 20 | 26 | 6 | 32.3 | 36.5 | 4.2 |
| Total Reading | 1 | - | 78 | - | - | 66.3 | - |
| | 2 | 38 | 48 | 10 | 43.6 | 48.9 | 5.3 |
| | 3 | 36 | 36 | 0 | 42.5 | 42.5 | 0.0 |
| | 4 | 28 | 42 | 14 | 37.7 | 45.8 | 8.1 |
| | 5 | 20 | 23 | 3 | 32.3 | 34.4 | 1.1 |

Table F

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Elementary Alphabus Program Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 54 | - | - | 52.1 | - |
| | 2 | 48 | 56 | 8 | 48.9 | 53.2 | 4.3 |
| | 3 | 28 | 36 | 8 | 37.7 | 42.5 | 4.8 |
| | 4 | 22 | 18 | -4 | 33.7 | 30.7 | -3.0 |
| | 5 | 16 | 18 | 2 | 29.1 | 30.7 | 1.6 |
| Reading | 1 | - | 52 | - | - | 51.1 | - |
| | 2 | 38 | 44 | 6 | 43.6 | 46.8 | 2.8 |
| | 3 | 16 | 38 | 22 | 29.1 | 43.6 | 14.5 |
| | 4 | 20 | 26 | 6 | 32.3 | 36.5 | 4.2 |
| | 5 | 12 | 18 | 6 | 25.3 | 30.7 | 5.4 |
| Total Reading | 1 | - | 56 | - | - | 53.2 | - |
| | 2 | 42 | 48 | 6 | 45.8 | 48.9 | 3.1 |
| | 3 | 16 | 36 | 20 | 29.1 | 42.5 | 13.4 |
| | 4 | 22 | 20 | -2 | 33.7 | 32.3 | -1.4 |
| | 5 | 12 | 18 | 6 | 25.3 | 30.7 | 5.4 |

Table G

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Elementary NIE Program Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 1 | - | 38 | - | - | 43.6 | - |
| | 2 | 36 | 44 | 8 | 42.5 | 46.8 | 4.3 |
| | 3 | 28 | 26 | -2 | 37.7 | 36.5 | -1.1 |
| | 4 | 22 | 22 | 0 | 33.7 | 33.7 | 0.0 |
| | 5 | 16 | 20 | 4 | 29.1 | 32.3 | 3.2 |
| Reading | 1 | - | 34 | - | - | 41.3 | - |
| | 2 | 24 | 32 | 4 | 35.1 | 40.1 | 5.0 |
| | 3 | 16 | 26 | 10 | 29.1 | 36.5 | 7.4 |
| | 4 | 18 | 26 | 8 | 30.7 | 36.5 | 5.8 |
| | 5 | 14 | 20 | 6 | 27.2 | 32.3 | 5.1 |
| Total Reading | 1 | - | 36 | - | - | 42.5 | - |
| | 2 | 26 | 38 | 12 | 36.5 | 43.6 | 7.1 |
| | 3 | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| | 4 | 20 | 22 | 2 | 27.2 | 33.7 | 6.5 |
| | 5 | 14 | 18 | 4 | 27.2 | 30.7 | 3.5 |

Table H

Summary of Percentile and NCE Gains in Mathematics
on California Achievement Tests
All Participants - Grades 1-6

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Computation | 1 | - | 51 | - | - | 50.5 | - |
| | 2 | 32 | 58 | 26 | 40.1 | 54.2 | 14.1 |
| | 3 | 19 | 42 | 23 | 31.5 | 45.8 | 14.3 |
| | 4 | 25 | 31 | 6 | 35.8 | 39.6 | 3.8 |
| | 5 | 20 | 29 | 9 | 32.3 | 38.3 | 6.0 |
| | 6 | 29 | 35 | 6 | 38.3 | 41.9 | 3.6 |
| Concepts | 1 | - | 43 | - | - | 46.3 | - |
| | 2 | 28 | 43 | 15 | 37.7 | 46.3 | 8.6 |
| | 3 | 25 | 33 | 8 | 35.8 | 40.7 | 4.9 |
| | 4 | 23 | 38 | 15 | 34.4 | 43.6 | 9.2 |
| | 5 | 17 | 28 | 11 | 29.9 | 37.7 | 7.8 |
| | 6 | 38 | 43 | 5 | 43.6 | 46.3 | 2.7 |
| Total Math | 1 | - | 44 | - | - | 46.8 | - |
| | 2 | 28 | 52 | 24 | 37.7 | 51.1 | 13.4 |
| | 3 | 19 | 38 | 19 | 31.5 | 43.6 | 12.1 |
| | 4 | 25 | 38 | 13 | 35.8 | 43.6 | 7.8 |
| | 5 | 18 | 27 | 9 | 30.7 | 37.1 | 6.4 |
| | 6 | 29 | 38 | 9 | 38.3 | 43.6 | 5.3 |

Table I

Summary of Percentile and NCE Gains in Mathematics
on California Achievement Tests
Public Elementary Schools

| | | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| Subtest | Grade | Pre | Post | Gain | Pre | Post | Gain |
| Computation | 1 | - | 54 | - | - | 52.1 | - |
| | 2 | 25 | 53 | 28 | 35.8 | 51.6 | 15.8 |
| | 3 | 16 | 37 | 21 | 29.1 | 43.0 | 13.9 |
| | 4 | 23 | 39 | 16 | 34.4 | 44.1 | 9.7 |
| | 5 | 15 | 26 | 11 | 28.2 | 36.5 | 8.3 |
| Concepts | 1 | - | 38 | - | - | 43.6 | - |
| | 2 | 22 | 43 | 21 | 33.7 | 46.3 | 12.6 |
| | 3 | 22 | 29 | 7 | 33.7 | 38.3 | 4.6 |
| | 4 | 23 | 34 | 11 | 34.4 | 41.3 | 6.9 |
| | 5 | 17 | 25 | 8 | 29.9 | 35.8 | 5.9 |
| Total Math | 1 | - | 44 | - | - | 46.8 | - |
| | 2 | 24 | 43 | 19 | 35.1 | 46.3 | 11.2 |
| | 3 | 16 | 35 | 19 | 29.1 | 41.9 | 12.8 |
| | 4 | 21 | 35 | 14 | 33.0 | 41.9 | 8.9 |
| | 5 | 15 | 22 | 7 | 28.2 | 33.7 | 5.5 |

Table J

Summary of Percentile and NCE Gains in Mathematics
on California Achievement Tests
Parochial Elementary Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Computation | 1 | - | 51 | - | - | 50.5 | - |
| | 2 | 45 | 58 | 13 | 47.4 | 54.2 | 6.8 |
| | 3 | 24 | 50 | 26 | 35.1 | 50.0 | 14.9 |
| | 4 | 34 | 45 | 11 | 41.3 | 47.4 | 6.1 |
| | 5 | 41 | 46 | 5 | 45.2 | 47.9 | 2.7 |
| | 6 | 29 | 35 | 6 | 38.3 | 41.9 | 3.6 |
| Concepts | 1 | - | 53 | - | - | 51.6 | - |
| | 2 | 38 | 53 | 15 | 43.6 | 51.6 | 8.0 |
| | 3 | 31 | 41 | 10 | 39.6 | 45.2 | 5.6 |
| | 4 | 36 | 48 | 12 | 42.5 | 48.9 | 6.4 |
| | 5 | 33 | 38 | 5 | 40.7 | 43.6 | 2.9 |
| | 6 | 38 | 43 | 5 | 43.6 | 46.3 | 3.3 |
| Total Math | 1 | - | 48 | - | - | 48.9 | - |
| | 2 | 40 | 56 | 16 | 44.7 | 53.2 | 8.5 |
| | 3 | 24 | 47 | 23 | 35.1 | 48.4 | 12.3 |
| | 4 | 32 | 44 | 12 | 40.1 | 46.8 | 6.7 |
| | 5 | 36 | 41 | 5 | 42.5 | 45.2 | 2.7 |
| | 6 | 29 | 38 | 9 | 38.3 | 43.6 | 5.3 |

# Appendix E

## Statistical Analyses of Reading Scores in the Middle School Program

Table A

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Middle Level - All Participants

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | Grade 6 | | | |
| Word Knowledge | 499 | Pre | 64.39 | 8.68 | 14.56*** |
| | | Post | 69.30 | 8.38 | |
| Reading | 499 | Pre | 61.27 | 11.35 | 15.28*** |
| | | Post | 69.12 | 10.72 | |
| Total Reading | 496 | Pre | 62.09 | 10.02 | 18.53*** |
| | | Post | 68.91 | 9.44 | |
| | | Grade 7 | | | |
| Word Knowledge | 508 | Pre | 67.50 | 11.39 | 10.45*** |
| | | Post | 72.09 | 8.33 | |
| Reading | 508 | Pre | 64.57 | 13.34 | 14.46*** |
| | | Post | 73.27 | 10.82 | |
| Total Reading | 506 | Pre | 64.77 | 12.41 | 16.22*** |
| | | Post | 72.43 | 9.27 | |

Table A (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 8 | | |
| Word Knowledge | 314 | Pre | 71.54 | 12.54 | 6.13*** |
| | | Post | 75.74 | 12.75 | |
| Reading | 314 | Pre | 69.67 | 14.77 | 10.18*** |
| | | Post | 77.20 | 12.06 | |
| Total Reading | 312 | Pre | 70.06 | 13.96 | 9.83*** |
| | | Post | 76.45 | 11.98 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table B

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Public Middle Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 6 | | |
| Word Knowledge | 344 | Pre | 63.03 | 8.82 | 10.27*** |
| | | Post | 67.33 | 8.17 | |
| Reading | 343 | Pre | 59.76 | 11.09 | 11.16*** |
| | | Post | 66.83 | 10.71 | |
| Total Reading | 341 | Pre | 60.45 | 10.13 | 13.51*** |
| | | Post | 66.66 | 9.40 | |
| | | | Grade 7 | | |
| Word Knowledge | 295 | Pre | 64.62 | 11.30 | 9.13*** |
| | | Post | 70.34 | 7.15 | |
| Reading | 298 | Pre | 61.83 | 12.66 | 10.99*** |
| | | Post | 70.80 | 10.60 | |
| Total Reading | 292 | Pre | 61.57 | 11.80 | 13.64*** |
| | | Post | 70.48 | 8.35 | |

Table B (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 8 | | |
| Word Knowledge | 203 | Pre | 68.14 | 11.57 | 5.23*** |
| | | Post | 73.05 | 12.16 | |
| Reading | 202 | Pre | 66.07 | 15.21 | 7.68*** |
| | | Post | 73.87 | 11.53 | |
| Total Reading | 201 | Pre | 65.99 | 13.97 | 7.62*** |
| | | Post | 72.96 | 11.54 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table C

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Parochial Middle Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 6 | | |
| Word Knowledge | 78 | Pre | 68.95 | 7.46 | 8.14*** |
| | | Post | 74.69 | 7.62 | |
| Reading | 79 | Pre | 67.61 | 10.41 | 6.22*** |
| | | Post | 74.68 | 9.85 | |
| Total Reading | 78 | Pre | 68.03 | 8.60 | 8.31*** |
| | | Post | 74.65 | 8.25 | |
| | | | Grade 7 | | |
| Word Knowledge | 100 | Pre | 75.90 | 8.51 | 0.37 |
| | | Post | 76.17 | 9.68 | |
| Reading | 100 | Pre | 72.66 | 10.94 | 4.18*** |
| | | Post | 77.29 | 10.76 | |
| Total Reading | 100 | Pre | 73.77 | 9.47 | 3.12** |
| | | Post | 76.16 | 10.42 | |

Table C (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 8 | | |
| Word Knowledge | 73 | Pre | 80.08 | 11.67 | 2.55* |
| | | Post | 83.00 | 13.54 | |
| Reading | 74 | Pre | 78.54 | 11.10 | 6.31*** |
| | | Post | 85.73 | 10.89 | |
| Total Reading | 73 | Pre | 80.21 | 9.85 | 5.73*** |
| | | Post | 85.71 | 9.75 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

Table D

Summary of Analysis of Reading Subtests
Metropolitan Achievement Tests
Middle NCEC Program Schools

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | Grade 6 | | | |
| Word Knowledge | 77 | Pre | 65.84 | 7.36 | 8.08*** |
| | | Post | 72.65 | 6.47 | |
| Reading | 77 | Pre | 61.51 | 11.25 | 9.84*** |
| | | Post | 73.64 | 7.75 | |
| Total Reading | 77 | Pre | 63.32 | 8.40 | 11.49*** |
| | | Post | 73.08 | 6.41 | |
| | | Grade 7 | | | |
| Word Knowledge | 113 | Pre | 67.58 | 10.18 | 6.87*** |
| | | Post | 73.05 | 8.57 | |
| Reading | 115 | Pre | 64.49 | 14.16 | 9.01*** |
| | | Post | 76.09 | 9.72 | |
| Total Reading | 114 | Pre | 65.10 | 12.38 | 9.65*** |
| | | Post | 74.15 | 9.18 | |

Table D (cont.)

| Subtest | N | Time of Testing | Mean Standard Score | Standard Deviation | t |
|---|---|---|---|---|---|
| | | | Grade 8 | | |
| Word Knowledge | 38 | Pre | 73.32 | 11.12 | 2.05* |
| | | Post | 76.13 | 8.23 | |
| Reading | 38 | Pre | 71.53 | 10.61 | 3.63*** |
| | | Post | 78.32 | 8.15 | |
| Total Reading | 38 | Pre | 72.11 | 9.85 | 3.91*** |
| | | Post | 77.13 | 8.16 | |

*p < .05, Statistically Significant
**p < .01, Statistically Significant
***p < .001, Statistically Significant

## Appendix F

## Grade Equivalent Scores in Reading by Subtest and Group at the Middle School Level

Table A

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Middle Level - All Participants

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 6 | 3.7 | 4.4 | 0.7 | 1.0 |
| 7 | 4.2 | 4.8 | 0.6 | 0.9 |
| 8 | 4.8 | 5.4 | 0.6 | 0.9 |
| | | Reading | | |
| 6 | 3.4 | 4.3 | 0.9 | 1.3 |
| 7 | 3.8 | 4.8 | 1.0 | 1.4 |
| 8 | 4.4 | 5.4 | 1.0 | 1.4 |
| | | Total Reading | | |
| 6 | 3.6 | 4.4 | 0.8 | 1.1 |
| 7 | 3.9 | 4.8 | 0.9 | 1.3 |
| 8 | 4.5 | 5.3 | 0.8 | 1.1 |

Table B

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Public Middle Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 6 | 3.6 | 4.1 | 0.5 | 0.7 |
| 7 | 3.8 | 4.5 | 0.7 | 1.0 |
| 8 | 4.2 | 5.0 | 0.8 | 1.1 |
| | | Reading | | |
| 6 | 3.3 | 4.1 | 0.8 | 1.1 |
| 7 | 3.5 | 4.5 | 1.0 | 1.4 |
| 8 | 3.9 | 4.9 | 1.0 | 1.4 |
| | | Total Reading | | |
| 6 | 3.4 | 4.2 | 0.8 | 1.1 |
| 7 | 3.6 | 4.6 | 1.0 | 1.4 |
| 8 | 4.1 | 4.9 | 0.8 | 1.1 |

Table C

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Parochial Middle Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 6 | 4.5 | 5.3 | 0.8 | 1.1 |
| 7 | 5.4 | 5.4 | 0.0 | 0.0 |
| 8 | 6.1 | 6.7 | 0.6 | 0.9 |
| | | Reading | | |
| 6 | 4.2 | 5.1 | 0.9 | 1.3 |
| 7 | 4.8 | 5.4 | 0.6 | 0.9 |
| 8 | 5.7 | 6.9 | 1.2 | 1.7 |
| | | Total Reading | | |
| 6 | 4.3 | 5.2 | 0.9 | 1.3 |
| 7 | 5.0 | 5.3 | 0.3 | 0.4 |
| 8 | 5.8 | 6.9 | 1.1 | 1.6 |

Table D

Summary of Pre and Post Mean Grade Equivalent Gains on the Reading Subtests of the Metropolitan Achievement Test, Middle NCEC Program Schools

| Grade | Pretest G. E. Mean | Posttest G. E. Mean | Mean G. E. Gain | Monthly Gain Rate |
|---|---|---|---|---|
| | | Word Knowledge | | |
| 6 | 3.9 | 5.0 | 1.1 | 1.6 |
| 7 | 4.2 | 5.0 | 0.8 | 1.1 |
| 8 | 5.0 | 5.4 | 0.4 | 0.6 |
| | | Reading | | |
| 6 | 3.5 | 4.9 | 1.4 | 2.0 |
| 7 | 3.7 | 5.3 | 1.6 | 2.3 |
| 8 | 4.7 | 5.5 | 0.8 | 1.1 |
| | | Total Reading | | |
| 6 | 3.7 | 4.9 | 1.2 | 1.7 |
| 7 | 3.9 | 5.0 | 1.1 | 1.6 |
| 8 | 4.8 | 5.5 | 0.7 | 1.0 |

## Appendix G

## Percentile and NCE Scores by Subtest and Group at the Middle School Level

Table A

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Middle Level - All Participants

| | | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| Subtest | Grade | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 6 | 10 | 14 | 4 | 23.0 | 27.2 | 4.2 |
| | 7 | 10 | 16 | 6 | 23.0 | 29.1 | 6.1 |
| | 8 | 11 | 14 | 3 | 24.2 | 27.2 | 3.0 |
| Reading | 6 | 10 | 14 | 4 | 23.0 | 27.2 | 4.2 |
| | 7 | 8 | 18 | 10 | 20.4 | 30.7 | 10.3 |
| | 8 | 10 | 16 | 6 | 23.0 | 29.1 | 6.1 |
| Total Reading | 6 | 10 | 14 | 4 | 23.0 | 27.2 | 4.2 |
| | 7 | 8 | 18 | 10 | 20.4 | 30.7 | 10.3 |
| | 8 | 10 | 14 | 4 | 23.0 | 27.2 | 4.2 |

Table B

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Public Middle Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 6 | 10 | 10 | - | 23.0 | 23.0 | 0.0 |
| | 7 | 8 | 12 | 4 | 20.4 | 25.3 | 3.9 |
| | 8 | 6 | 10 | 4 | 17.3 | 23.0 | 5.7 |
| Reading | 6 | 10 | 11 | 1 | 23.0 | 24.2 | 1.2 |
| | 7 | 6 | 14 | 8 | 17.3 | 27.2 | 9.9 |
| | 8 | 6 | 12 | 6 | 17.3 | 25.3 | 8.0 |
| Total Reading | 6 | 8 | 11 | 3 | 20.4 | 24.2 | 3.8 |
| | 7 | 6 | 16 | 10 | 17.3 | 29.1 | 11.8 |
| | 8 | 6 | 11 | 5 | 17.3 | 24.2 | 6.9 |

Table C

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Parochial Middle Schools

| Subtest | Grade | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 6 | 20 | 26 | 6 | 32.3 | 36.5 | 4.2 |
| | 7 | 23 | 23 | 0 | 34.4 | 34.4 | 0.0 |
| | 8 | 22 | 24 | 2 | 33.7 | 35.1 | 1.4 |
| Reading | 6 | 20 | 24 | 4 | 32.3 | 35.1 | 1.8 |
| | 7 | 20 | 24 | 4 | 32.3 | 35.1 | 1.8 |
| | 8 | 20 | 32 | 12 | 32.3 | 40.1 | 7.8 |
| Total Reading | 6 | 18 | 23 | 5 | 30.7 | 34.4 | 3.7 |
| | 7 | 20 | 23 | 3 | 32.3 | 34.4 | 2.1 |
| | 8 | 20 | 30 | 10 | 32.3 | 39.0 | 6.7 |

Table D

Summary of Percentile and NCE Gains in Reading
on Metropolitan Achievement Tests
Middle NCEC Program Schools

| | | Percentile | | | NCE | | |
|---|---|---|---|---|---|---|---|
| Subtest | Grade | Pre | Post | Gain | Pre | Post | Gain |
| Word Knowledge | 6 | 14 | 20 | 6 | 27.2 | 32.3 | 5.1 |
| | 7 | 10 | 18 | 8 | 23.0 | 30.7 | 7.7 |
| | 8 | 12 | 14 | 2 | 25.3 | 27.2 | 1.9 |
| Reading | 6 | 11 | 22 | 11 | 24.2 | 33.7 | 9.5 |
| | 7 | 8 | 23 | 15 | 20.4 | 34.4 | 14.0 |
| | 8 | 12 | 18 | 6 | 25.3 | 30.7 | 5.4 |
| Total Reading | 6 | 11 | 20 | 9 | 24.2 | 32.2 | 8.1 |
| | 7 | 8 | 20 | 12 | 20.4 | 32.3 | 11.9 |
| | 8 | 11 | 16 | 5 | 24.2 | 29.1 | 5.1 |